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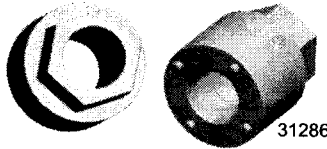
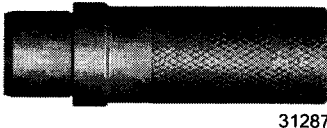
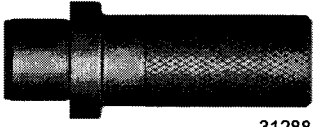
Vazer Sterndrive

Vazer Sterndrive Tool Application Chart

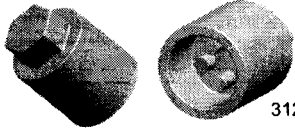



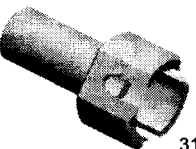
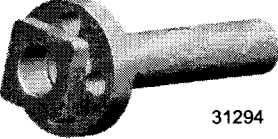

Part No.	Description	Vazer
12-54048	Belleville Washer	X
91-14311A2	Driveshaft Bearing Preload Tool	X
91-17256	U-joint Retainer Wrench	X
91-18605A2	Bearing Cup and Adaptor Installation Tool	X
91-31106T	Bearing Cup Driver	X
91-31108T	Oil Seal Driver	X
91-31229A7	Bearing Removal and Installation Kit	X
91-33491	Needle Bearing Driver	X
91-33493T	Bearing Cup Driver	X
91-34379T	Bearing Cup Driver	X
91-34569A1	Slide Hammer	X
91-37241	Universal Puller Plate	X
91-37299Q2	Grease Gun	X
91-38053A05	Power Steering Gauge Kit	X
91-38277A2	Tab Washer Pliers	X
91-38919	Puller Head	X
91-43506T	Driveshaft Bearing Retainer Wrench	X
91-44357Q2	Flushing Device	X
91-45497A1	Exhaust Bellows Expander Tool	X
91-46086A1	Puller Jaws Assembly	X
91-52915A6	Power Trim Test Gauge Kit	X
91-56775T	Driveshaft Holding Tool	X
91-58222A1	Dial Indicator	X
91-60523	Drive Gear Shimming Tool	X
91-61067003	Pinion Nut Wrench	X
91-61069T	Bearing Carrier Retainer Nut Wrench	X
91-61077T	Propeller Shaft/Driveshaft Adaptor	X
91-63209	Torch Lamp	X
91-63616T	Puller Head	X
91-66274	Torque Wrench, lb-in.	X
91-78310	Hinge Pin Tool	X
91-78473	Indicator Flag Tool	X
91-806794A03	T-Bar Alignment Tool	X
91-806908A1	Power Steering Adaptor Kit	X
91-808053T	Bearing Cup Driver	X
91-816246	Guide Plate	X
91-816242	Puller Jaws	X
91-817569T	Carrier Seal Driver	X
91-818162	Sleeve Installation Tool	X

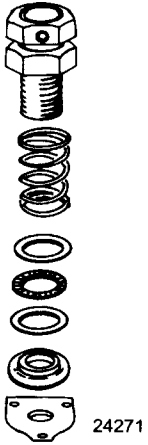





Part No.	Description	Vazer
91-818169T	Sleeve Removal Tool	X
91-83155	Dial Indicator Adaptor Kit	X
91-854377	Driven Gear Shimming Tool	X
91-85716	Puller Bolt for 91-46086A1	X
91-864497	Seal Driver	X
91-866107	Snap Ring Driver	X
91-866108	Cross Bearing Mandrel	X
91-866109	Cross Bearing Head Press	X
91-866590A02	Transom Drill Fixture	X
Obtain locally	Cross and Bearing Vise Press	X
91-879150A02	Gimbal Housing - Upper Swivel Shaft/Seal and Bushing Installation Tool	X
91-89897	Dial Indicator Holding Tool	X
91-90774	Guide/Puller Tool	X
91-8M2000895	Gimbal Ring - Hydraulic Anchor Pin Installation and Removal Tool	X
91-8M2001017	Alignment Bar	X
91-8M2001196	Shift Slide Stabilizer	X
91-8M2001720	End Cap Wrench, Steering Cylinder Hydraulic/Power	X
91-8M2001723	Trim Cylinder Bushing Installation Tool	X
91-8M2004518	Bushing Installation Tool	X
91-8M2004519	Seal and Bushing Installation Tool	X
91-8M2005188	Trim Cylinder Oil Seal Installation Tool	X
91-8M2005644	Pinion Nut Wrench	X
91-8M2005712	Pinion Gear Shimming Tool	X

Vazer Sterndrive Tools



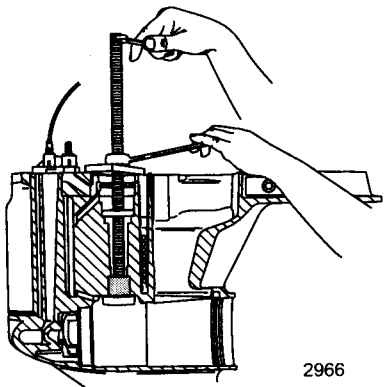
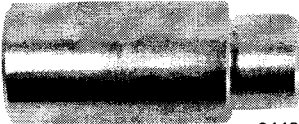
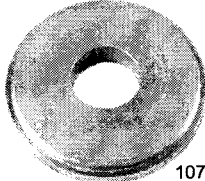
End Cap Wrench, Steering Cylinder - Hydraulic/Power	91-8M2001720
	Removes and installs steering power and hydraulic booster cylinder end caps.
Trim Cylinder Bushing Installation Tool	91-8M2001723
	Installs trim cylinder bushings.
Trim Cylinder Oil Seal Installation Tool	91-8M2005188
	Installs trim cylinder oil seals.

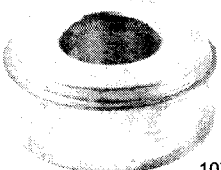



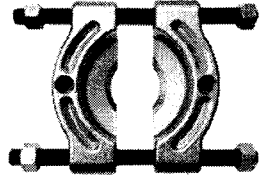
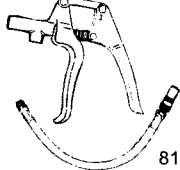

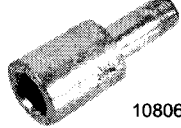
Section 1 - Vazer Sterndrive

Gimbal Ring - Hydraulic Anchor Pin Installation and Removal Tool	91-8M2000895
 <p style="text-align: right;">31289</p>	Removes and installs hydraulic gimbal ring anchor pins.
Gimbal Housing - Upper Swivel Shaft Seal and Bushing Installation Tool	91-879150A02
 <p style="text-align: right;">31443</p>	Installs upper swivel shaft bushings and oil seal.
Seal and Bushing Installation Tool	91-8M2004519
 <p style="text-align: right;">31292</p>	Installs bell housing upper shift shaft bushing and oil seal.
Bushing Installation Tool	91-8M2004518
 <p style="text-align: right;">31290</p>	Installs lower bell housing shift shaft bushing.
Pinion Nut Wrench	91-8M2005644
 <p style="text-align: right;">31293</p>	Holds the pinion nut for removing the drive shaft and pinion gear.
Pinion Gear Shimming Tool	91-8M2005712
 <p style="text-align: right;">31294</p>	Measures the pinion gear height for setting the pinion gear location.
T-Bar Alignment Tool	91-806794A03
 <p style="text-align: right;">26813</p>	Locates the engine mount placement when installing the engine.

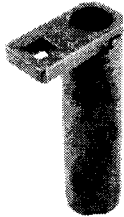

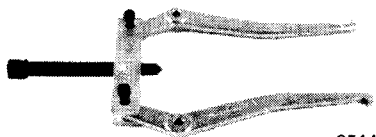
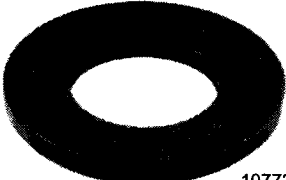

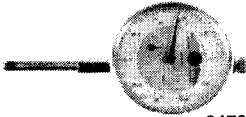
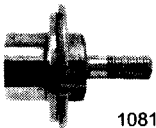
<p>Driveshaft Bearing Preload Tool</p>	<p>91-14311A2</p>
 <p>24271</p>	<p>Preloads the driveshaft bearing when checking pinion height and backlash.</p>
<p>U-Joint Retainer Wrench</p>	<p>91-17256</p>
 <p>10482</p>	<p>Installs and torques the U-joint retainer nut.</p>
<p>Bearing Cup and Adaptor Installation Tool</p>	<p>91-18605A 2</p>
 <p>9591</p>	<p>Installs the forward gear bearing race on a standard gearcase. Presses the reverse gear bearing adaptor into the gear housing on a counter-rotating gearcase.</p>
<p>Oil Seal Driver</p>	<p>91-31108T</p>
 <p>8883</p>	<p>Installs bearing carrier oil seals.</p>
<p>Snap Ring Driver</p>	<p>91-866107</p>
 <p>21565</p>	<p>Aids in the removal of the cross bearing snap rings. Part of the Cross Bearing Removal and Installation Kit (91-866107A01).</p>
<p>Cross Bearing Mandrel</p>	<p>91-866108</p>
 <p>31398</p>	<p>Aids in the removal and installation of the bearing caps on the cross bearings.</p>


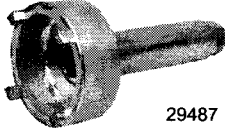
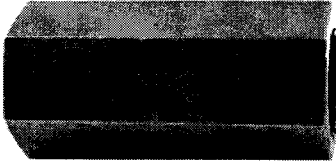
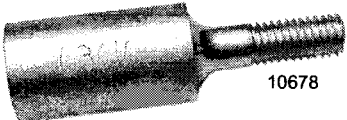




Section 1 - Vazer Sterndrive

<p>Cross Bearing Head Press</p>	<p>91-866109</p>
 <p>31397</p>	<p>Aids in the removal and installation of the bearing caps on the cross bearings.</p>
<p>Cross and Bearing Vise Press</p>	<p>Obtain locally</p>
 <p>31400</p>	<p>Aids in the removal and installation of caps on the cross bearing assembly.</p>
<p>Bearing Removal and Installation Kit</p>	<p>91-31229A7</p>
 <p>2966</p>	<p>Installs and removes the bearings in all gearcases. 91-31229A7 tool assembly includes the following components: 11-24156 Hex Nut 12-34961 Washer 91-15755T Bearing Carrier 91-29310 Plate 91-29610 Pilot Plate 91-30366T1 Mandrel 91-31229 Puller Shaft 91-32325T Driver Head 91-32336 Driver Needle Bearing 91-36379 Puller/Head Gear 91-36569T Driver Head 91-36571T Pilot Washer 91-37292 Roller Bearing 91-37311 Driver Head 91-37312 Driver Head 91-37323 Driver Head Rod 91-37324 Pilot Washer 91-37350T Pilot Mandrel 91-38628T Puller/Driver Head 91-52393 Driver Needle Bearing 91-52394 Head Pull Rod</p>
<p>Needle Bearing Driver</p>	<p>91-33491</p>
 <p>9443</p>	<p>Installs the needle bearing in the forward gear. Removes and installs the seals and bearing in the gimbal housing.</p>
<p>Bearing Cup Driver</p>	<p>91-33493T</p>
 <p>10764</p>	<p>Installs the upper driveshaft bearing cup into the driveshaft housing.</p>

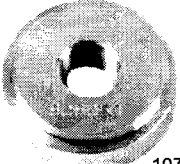


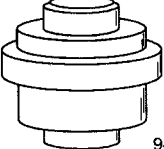


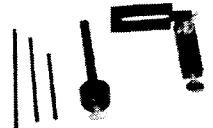
Bearing Cup Driver	91-34379T
 <p>10765</p>	Installs the driveshaft bearing cup into the gear housing.
Slide Hammer	91-34569A 1
 <p>6761</p>	Aids in the removal of various drive components. Use puller jaws (91-34570).
Puller Jaws	91-816242
 <p>10681</p>	Use with either the two prong or three prong puller on all drive units.
Bearing Cup Driver	91-31106T
 <p>8882</p>	Installs the driven gear bearing cup.
Universal Puller Plate	91-37241
 <p>8505</p>	Removes bearings from gears and the driveshaft.
Grease Gun	91-37299Q 2
 <p>8120</p>	Aids in the lubrication of key areas on the drive and transom. Allows easy access to grease fittings.
Tab Washer Pliers	91-38277A2
 <p>10827</p>	Bends the propeller tab washers off of the tab nut.
Puller Head	91-38919
 <p>10806</p>	Removes the swivel pin from the gimbal rings.

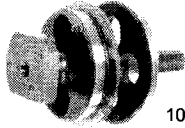
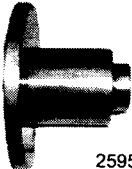


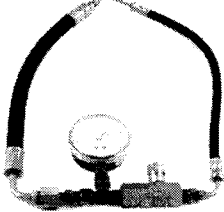

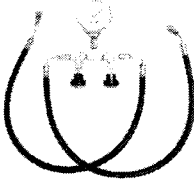
Section 1 - Vazer Sterndrive

Driveshaft Bearing Retainer Wrench	91-43506T
 <p>9520</p>	Removes and installs the threaded driveshaft bearing retainer.
Exhaust Bellows Expander Tool	91-45497A1
 <p>10483</p>	Aids in the installation of the exhaust bellows.
Puller Jaws Assembly Puller Bolt	91-46086A1 91-85716
 <p>9514</p>	Aids in the removal of the bearing carrier.
Belleville Washer	12-54048
 <p>10772</p>	Use with the Pinion Nut Adaptor (91-61067A3) and a propeller nut to check the reverse gear backlash.
Driveshaft Holding Tool	91-56775T
 <p>9448</p>	Provides a wrench surface to turn the driveshaft. Also used to hold driveshaft for pinion gear installation.
Dial Indicator	91-58222A1
 <p>9479</p>	Measures distance, movement, and runout; used for drive system assembly and engine setup.
Drive Gear Shimming Tool	91-60523
 <p>10819</p>	Measures the U-joint pinion gear clearance.


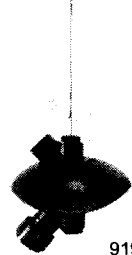
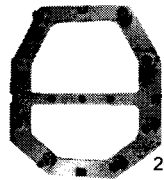
Pinion Nut Wrench	91-61067003
 <p>29501</p>	<p>Holds the pinion nut when removing the pinion gear and driveshaft.</p>
Bearing Carrier Retainer Nut Wrench	91-61069T
 <p>29487</p>	<p>Installs and removes the bearing carrier retainer nuts.</p>
Propeller Shaft/Driveshaft Adaptor	91-61077T
 <p>10805</p>	<p>Provides a wrench surface to turn the propeller shaft.</p>
Puller Head	91-63616T
 <p>10678</p>	<p>Removes the upper swivel shaft on gimbal rings.</p>
Torque Wrench, lb. in.	91-66274
 <p>10829</p>	<p>Dial-type torque wrench that sets torque from 9 to 150 lb. in.; 3/8 in. drive.</p>
Hinge Pin Tool	91-78310
 <p>10672</p>	<p>Removes and installs the hinge pins.</p>
Indicator Flag Tool	91-78473
 <p>31686</p>	<p>Aids in checking gear backlash.</p>
Alignment Bar	8M2001017
 <p>26831</p>	<p>Aids in aligning the engine to the transom assembly for sterndrive installation.</p>

Section 1 - Vazer Sterndrive

Bearing Cup Driver	91-808053T
 <p>10768</p>	<p>Aids in the installation of a new smaller outside diameter top cover bearing.</p>
Shift Slide Stabilizer	8M2001196
	<p>Holds the shift shaft slide in the proper position while installing the sterndrive onto the bell housing studs.</p>
Guide Plate	91-816243
 <p>4481</p>	<p>Centers the rod used to drive in the forward gear bearing on a standard rotation gearcase, and the reverse gear bearing on a counter rotation gearcase.</p>
Carrier Seal Driver	91-817569T
 <p>9481</p>	<p>Removes and installs the bearing carrier seals. Installs seals in the driveshaft seal carrier.</p>
Sleeve Installation Tool	91-818162
 <p>10823</p>	<p>Installs the aluminum sleeve into the U-joint bellows.</p>
Sleeve Removal Tool	91-818169T
 <p>10824</p>	<p>Removes the aluminum sleeve from the U-joint bellows.</p>
Dial Indicator Adaptor	91-83155
 <p>2999</p>	<p>Dial indicator holding fixture.</p>

Driven Gear Shimming Tool	91-854377
 <p>10821</p>	Use to shim the driven gear on the Vazer. Can be Identified by the letters 'A, B, C.'
Seal Driver	91-864497
 <p>25951</p>	Installs double lip seal in driveshaft housing.
Dial Indicator Holding Tool	91-89897
 <p>29496</p>	Secures the dial indicator to the gear housing when checking backlash.
Guide/Puller tool	91-90774
 <p>31043</p>	Presses the bearing cone assembly on to the lower driveshaft.
Power Steering Test Gauge Kit	91-38053A05
 <p>10804</p>	Tests the power steering system pressure.
Power Steering Adaptor Kit	91-806908A02
 <p>10803</p>	Adapts power steering test gauge (91-38053A05) to test power steering control valves.
Power Trim Test Gauge Kit	91-52915A6
 <p>3753</p>	Tests circuit pressures for various trim pumps.

Section 1 - Vazer Sterndrive

Torch Lamp	91-63209
 <p>8776</p>	Heats surfaces to aid in the removal and installation of interference fit engine components.
Flushing Device	91-44357Q 2
 <p>9192</p>	Attaches to the water intakes; provides a fresh water connection when flushing the cooling system or operating the engine.
Transom Drill Fixture	91-866590A02
 <p>26815</p>	Aids in cutting and drilling the boat transom for sterndrive installation.

Section 2 - Alpha Sterndrive

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Alpha Sterndrive

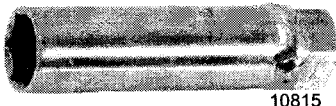

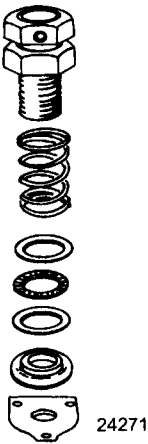
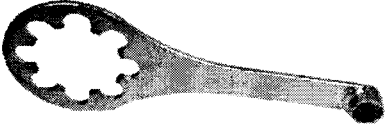

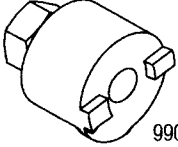
Alpha Sterndrive Tool Application Chart



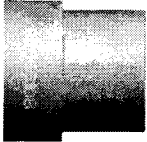
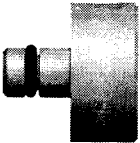

Part No.	Description	Alpha One Gen II	MC-1, R-MR Alpha One
12-54048	Belleville Washer	X	X
91-12037	Shift Cable Tool	X	X
91-14311A2	Driveshaft Bearing Preload Tool	X	X
91-17256	U-joint Retainer Wrench	X	X
91-18605A2	Bearing Cup and Adaptor Installation Tool	X	X
91-31106T	Bearing Cup Driver		X
91-31107T	Shift Shaft Bushing Tool		X
91-31108T	Oil Seal Driver	X	X
91-31229A7	Bearing Removal and Installation Kit	X	X
91-33489	Bearing Driver		X
91-33491	Needle Bearing Driver		X
91-33492T	Needle Bearing Driver		X
91-33493T	Bearing Cup Driver		X
91-34379T	Bearing Cup Driver		X
91-34569A1	Slide Hammer	X	X
91-36577T	Bearing Cup Driver		X
91-37240A1	Snap Ring Pliers		X
91-37241	Universal Puller Plate	X	X
91-37299Q2	Grease Gun	X	X
91-38053A05	Power Steering Test Gauge Kit	X	X
91-38277A2	Tab Washer Pliers		X
91-38756	U-joint Adaptor	X	X
91-38918T	Bearing Cup Driver		X
91-38919	Puller Head		X
91-43506T	Driveshaft Bearing Retainer Wrench	X	X
91-43591T	Seal Driver	X	X
91-43693A2	Transom Cutout and Drill Fixture	X	X
91-44110T	Seal Driver	X	X
91-44357Q2	Flushing Device	X	X
91-45497A1	Exhaust Bellows Expander Tool	X	X
91-46086A1 / 91-85716	Puller Jaws Assembly/Puller Bolt	X	X
91-52915A6	Power Trim Test Gauge Kit	X	X
91-53459	Backlash Indicator Rod	X	X
91-56048T	Pinion Gear Locating Tool	X	X
91-56775T	Driveshaft Holding Tool	X	X
91-58222A1	Dial Indicator	X	X
91-60523	Drive Gear Shimming Tool	X	X

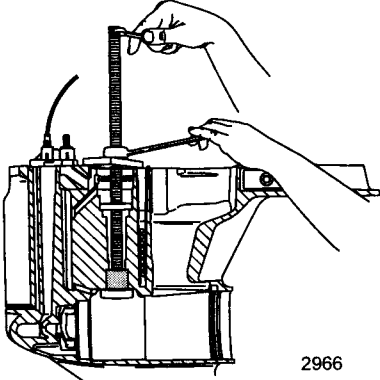
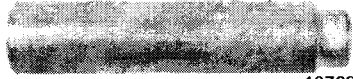


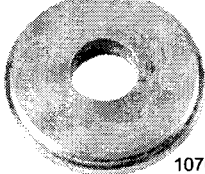
Part No.	Description	Alpha One Gen II	MC-1, R-MR Alpha One
91-60526T	Driven Gear Shimming Tool	X	X
91-61067A3	Pinion Nut Wrench	X	X
91-61069T	Bearing Carrier Retainer Nut Wrench	X	X
91-61077T	Propeller Shaft Adaptor	X	X
91-63209	Torch Lamp	X	X
91-63616T	Puller Head	X	X
91-66274	Torque Wrench, lb-in.	X	X
75104A7	Shift Shaft Lever		X
91-78310	Hinge Pin Tool	X	X
91-805057A2	Bushing Installation Tool	X	X
91-805475A1	Alignment Tool Assembly	X	X
91-806908A02	Power Steering Adaptor Kit	X	X
91-807944T	Needle Bearing Installation Tool	X	
91-808053T	Bearing Cup Driver	X	X
91-809815A1	Shift Slide Stabilizer	X	X
91-815850	Forward Gear Assembly Tube	X	X
91-816242	Puller Jaws	X	X
91-816243	Guide Plate	X	X
91-816244	Reverse Gear Needle Bearing Driver	X	X
91-816245	Needle Bearing Remover	X	X
91-817569T	Carrier Seal Driver	X	
91-817570T	Upper Driveshaft Housing Seal Driver	X	
91-818162	Sleeve Installation Tool	X	
91-818169T	Sleeve Removal Tool	X	
91-821571A1	Water Pump Alignment Pins	X	
91-821709T	Trim Cylinder End Cap Tool	X	X
91-83155	Dial Indicator Adaptor Kit	X	
91-854377	Driven Gear Shimming Tool	X	
91-864497	Seal Driver	X	X
91-866107	Snap Ring Driver	X	
91-866108	Cross Bearing Mandrel	X	
91-866109	Cross Bearing Head Press	X	
Obtain locally	Cross and Bearing Vise Press	X	
91-866763A01	Intermediate Cable Installation and Insert Tool	X	X
91-877528-1	MCM Tool Overlay Kit	X	X
91-89897	Dial Indicator Holding Tool	X	X
91-90774	Guide/Puller Tool	X	
91-95639	Pipe Tap		X
91-8M2001017	Alignment Bar	X	X
91-8M2001196	Shift Slide Stabilizer	X	X
91-8M2004518	Bushing Installation Tool	X	X

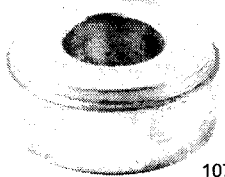


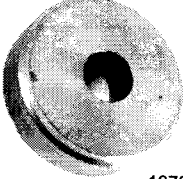

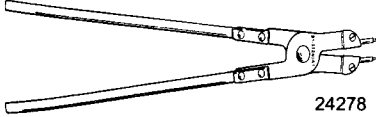
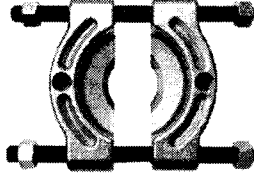
Part No.	Description	Alpha One Gen II	MC-1, R-MR Alpha One
91-8M2004519	Seal and Bushing Installation Tool	X	X

Alpha Sterndrive Tools

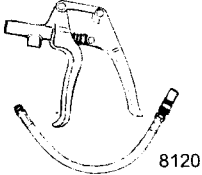

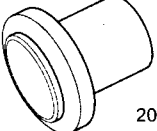

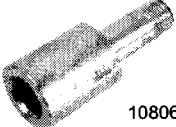


Shift Cable Tool 	91-12037 Installs and removes the intermediate shift cable into the bell housing of the transom assembly.
Intermediate Cable Installation and Insert Tool 	91-866763A01 Installs and removes the new Intermediate Alpha shift cable assembly into the bell housing of the transom assembly.
Driveshaft Bearing Preload Tool 	91-14311A2 Preloads the driveshaft bearing when checking pinion height and backlash.
U-Joint Retainer Wrench 	91-17256 Installs/removes and torques the U-joint retainer nut.
Bearing Cup and Adaptor Installation Tool 	91-18605A 2 Installs the forward gear bearing race on a standard gearcase. Presses the reverse gear bearing adaptor into the gear housing on a counter-rotating gearcase.
Shift Shaft Bushing Tool 	91-31107T Aids in the removal and installation of the shift shaft bushing.

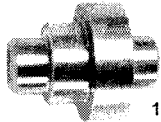

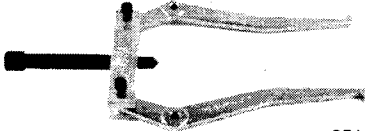
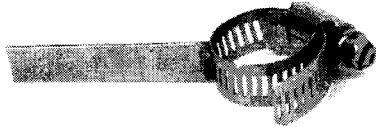
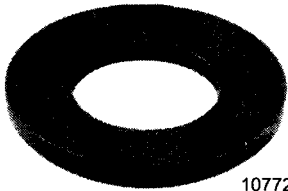
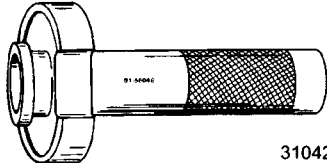

Oil Seal Driver	91-31108T
 <p>8883</p>	Installs bearing carrier oil seals.
Snap-Ring Driver	91-866107
 <p>21565</p>	Aids in the removal of the cross bearing snap rings. Part of the Cross Bearing Removal and Installation Kit (91-866107A01).
Cross Bearing Mandrel	91-866108
 <p>31398</p>	Aids in the removal and installation of the bearing caps on the cross bearings.
Cross Bearing Head Press	91-866109
 <p>31397</p>	Aids in the removal and installation of the bearing caps on the cross bearings.
Cross and Bearing Vise Press	Obtain locally
 <p>31400</p>	Aids in removal and installing caps on the cross bearing assembly.

<p>Bearing Removal and Installation Kit</p>	<p>91-31229A7</p>
 <p>2966</p>	<p>Installs and removes the bearings in all gearcases. 91-31229A7 tool assembly includes the following components: 11-24156 Hex Nut 12-34961 Washer 91-15755T Bearing Carrier 91-29310 Plate 91-29610 Pilot Plate 91-30366T1 Mandrel 91-31229 Puller Shaft 91-32325T Driver Head 91-32336 Driver Needle Bearing 91-36379 Puller/Head Gear 91-36569T Driver Head 91-36571T Pilot Washer 91-37292 Roller Bearing 91-37311 Driver Head 91-37312 Driver Head 91-37323 Driver Head Rod 91-37324 Pilot Washer 91-37350T Pilot Mandrel 91-38628T Puller/Driver Head 91-52393 Driver Needle Bearing 91-52394 Head Pull Rod</p>
<p>Bearing Driver</p>	<p>91-33489</p>
 <p>10769</p>	<p>Installs the small roller bearing into the gimbal housing.</p>
<p>Needle Bearing Driver</p>	<p>91-33491</p>
 <p>9443</p>	<p>Installs the needle bearing in the forward gear. Removes and installs the seals and bearing in the gimbal housing.</p>
<p>Needle Bearing Driver</p>	<p>91-33492T</p>
 <p>10789</p>	<p>Removes and installs the lower swivel pin bearing in the gimbal ring.</p>
<p>Bearing Cup Driver</p>	<p>91-33493T</p>
 <p>10764</p>	<p>Installs the upper driveshaft bearing cup into the driveshaft housing.</p>

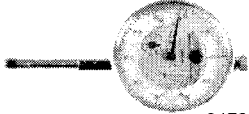
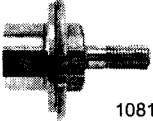


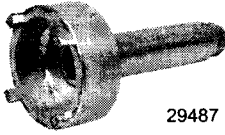
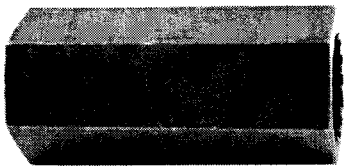
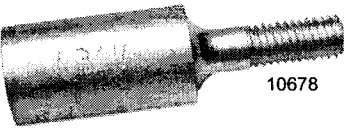

<p>Bearing Cup Driver</p>	<p>91-34379T</p>
 <p>10765</p>	<p>Installs the driveshaft bearing cup into the gear housing.</p>
<p>Slide Hammer</p>	<p>91-34569A 1</p>
 <p>6761</p>	<p>Aids in the removal of various drive components. Use puller jaws (91-34570).</p>
<p>Puller Jaws</p>	<p>91-816242</p>
 <p>10681</p>	<p>Use with either the two-prong or three-prong puller on all drives.</p>
<p>Bearing Cup Driver</p>	<p>91-36577T</p>
 <p>10766</p>	<p>Installs the forward gear bearing cup into a the gear housing of the with a bearing cup outside diameter of 89 mm (3.500 in.).</p>
<p>Bearing Cup Driver</p>	<p>91-31106T</p>
 <p>8882</p>	<p>Installs the driven gear bearing cup.</p>
<p>Snap Ring Pliers</p>	<p>91-37240A1</p>
 <p>24278</p>	<p>Removes the snap ring located at the gimbal housing bearing.</p>
<p>Universal Puller Plate</p>	<p>91-37241</p>
 <p>8505</p>	<p>Removes bearings from gears and the driveshaft.</p>







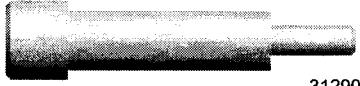

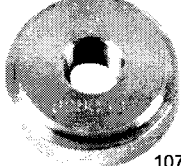
Section 2 - Alpha Sterndrive

Grease Gun	91-37299Q 2
 <p>8120</p>	Aids in the lubrication of key areas. Allows easy access to grease fittings.
Tab Washer Pliers	91-38277A2
 <p>10827</p>	Bends the propeller tab washers off of the tab nut.
U-joint Adaptor	91-38756
 <p>20661</p>	Supports the yoke when disassembling the U-joint.
Bearing Cup Driver	91-38918T
 <p>10767</p>	Installs the bearing cup in the top cover of the driveshaft housing.
Puller Head	91-38919
 <p>10806</p>	Removes the swivel pin from the gimbal rings.
Driveshaft Bearing Retainer Wrench	91-43506T
 <p>9520</p>	Removes and installs the threaded driveshaft bearing retainer.
Seal Driver	91-43591T
 <p>10812</p>	Installs the upper driveshaft oil seal.

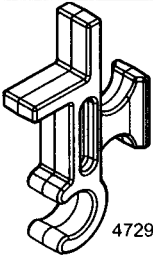


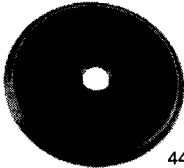


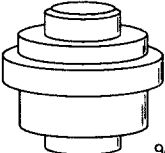
Seal Driver  10814	91-44110T Installs the oil seals in the water pump base on older Alpha product.
Exhaust Bellows Expander Tool  10483	91-45497A1 Aids in the installation of the exhaust bellows.
Puller Jaws Assembly Puller Bolt  9514	91-46086A1 91-85716 Removes the bearing carrier.
Backlash Indicator Rod  10452	91-53459 Aids in checking gear backlash.
Belleville Washer  10772	12-54048 Use with the Pinion Nut Adaptor (91-61067A3) and a propeller nut to check the reverse gear backlash.
Pinion Gear Locating Tool  31042	91-56048T Measures pinion gear height.
Driveshaft Holding Tool  9448	91-56775T Provides a wrench surface to turn the driveshaft. Also used to hold driveshaft for pinion gear installation.

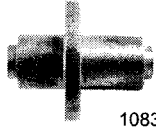

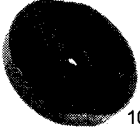
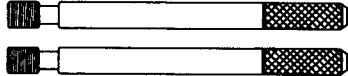

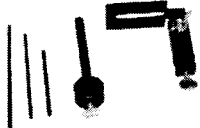

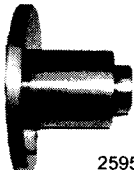
Section 2 - Alpha Sterndrive

Dial Indicator	91-58222A1
 <p>9479</p>	Measures distance, movement, and runout; used for drive system assembly and engine setup.
Drive Gear Shimming Tool	91-60523
 <p>10819</p>	Measures the U-joint pinion gear clearance.
Driven Gear Shimming Tool	91-60526T
 <p>10820</p>	Aids in measuring the upper driven gear clearance.
Pinion Nut Wrench	91-61067003
 <p>29501</p>	Holds the pinion nut when removing the pinion gear and driveshaft.
Bearing Carrier Retainer Nut Wrench	91-61069T
 <p>29487</p>	Installs and removes the bearing carrier retainer nuts.
Propeller Shaft/Driveshaft Adaptor	91-61077T
 <p>10805</p>	Provides a wrench surface to turn the propeller shaft.
Puller Head	91-63616T
 <p>10678</p>	Removes the upper swivel shaft on gimbal rings.
Torque Wrench, lb. in.	91-66274
 <p>10829</p>	Dial-type torque wrench that sets torque from 9 to 150 lb. in.; 3/8 in. drive.




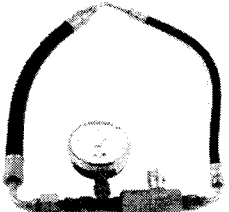
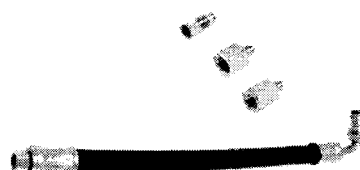
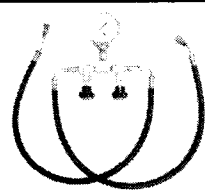

Shift Shaft Lever	75104A7
 <p>10818</p>	Assists in shifting the gear housing when the gear housing is separated from the driveshaft housing.
Hinge Pin Tool	91-78310
 <p>10672</p>	Removes and installs the hinge pins.
Bushing Installation Tool	91-805057A2
 <p>10773</p>	Installs the upper shift shaft bushings into the transom assembly.
Alignment Tool Assembly	91-805475A 1
 <p>9183</p>	Used to align the engine to the standard Bravo transom assembly for sterndrive installation.
Alignment Bar	8M2001017
 <p>26831</p>	Aids in aligning the engine to the transom assembly for sterndrive installation.
Seal and Bushing Installation Tool	91-8M2004519
 <p>31292</p>	Installs bell housing upper shift shaft bushing and oil seal.
Bushing Installation Tool	91-8M2004518
 <p>31290</p>	Installs lower bell housing shift shaft bushing.
Needle Bearing Installation Tool	91-807944T
 <p>10792</p>	Aids in the installation of the needle bearing in the reverse gear of a counter-rotating gearcase.
Bearing Cup Driver	91-808053T
 <p>10768</p>	Aids in the installation of a new smaller outside diameter top cover bearing.


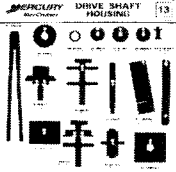
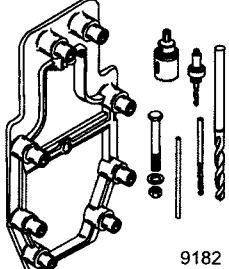
Section 2 - Alpha Sterndrive

Shift Slide Stabilizer	91-809815A1
 <p>4729</p>	<p>Holds the Alpha shift slide in the proper position as the sterndrive is installed onto the bell housing studs</p>
Shift Slide Stabilizer	8M2001196
	<p>Holds the shift shaft slide in the proper position while installing the sterndrive onto the bell housing studs.</p>
Forward Gear Assembly Tube	91-815850
 <p>11577</p>	<p>Removes and installs the forward gear and bearing adaptor assembly for counter rotation gearcases.</p>
Guide Plate	91-816243
 <p>4481</p>	<p>Centers the rod used to drive in the forward gear bearing on a standard rotation gearcase, and the reverse gear bearing on a counter rotation gearcase.</p>
Reverse Gear Needle Bearing Driver	91-816244
 <p>10810</p>	<p>Installs the needle bearings into the reverse gear of a counter-rotating gearcase.</p>
Needle Bearing Removal Tool	91-816245
 <p>10793</p>	<p>Removes the needle bearings from the back adaptor of a counter-rotating gearcase.</p>
Carrier Seal Driver	91-817569T
 <p>9481</p>	<p>Removes and installs the bearing carrier seals. Installs seals in the driveshaft seal carrier.</p>

Upper Driveshaft Housing Seal Driver	91-817570T
 <p>10833</p>	Installs the seals in the upper driveshaft housing.
Sleeve Installation Tool	91-818162
 <p>10823</p>	Installs the aluminum sleeve into the U-joint bellows.
Sleeve Removal Tool	91-818169T
 <p>10824</p>	Removes the aluminum sleeve from the U-joint bellows.
Water Pump Alignment Pins	91-821571A 1
 <p>9482</p>	Aligns the water pump during installation.
Trim Cylinder End Cap Tool	91-821709T
 <p>10691</p>	Allows easy removal of the trim cylinder end caps. Required if tilt limit spacers are to be installed or if the trim in limit spacer is to be removed (to allow additional trim in range).
Dial Indicator Adaptor	91-83155
 <p>2999</p>	Dial indicator holding fixture.
Driven Gear Shimming Tool	91-854377
 <p>10821</p>	Use to shim the driven gear on the Alpha One Gen. II starting with Serial Number 0L100009 and above. Can be identified by the letters 'A, B, C.'
Seal Driver	91-864497
 <p>25951</p>	Installs double lip seal in driveshaft housing.

Section 2 - Alpha Sterndrive

Dial Indicator Holding Tool	91-89897
 <p>29496</p>	<p>Secures the dial indicator to the gear housing when checking backlash.</p>
Pipe Tap	91-95639
 <p>10802</p>	<p>Taps the bell housing for shift cable installation.</p>
Guide/Puller tool	91-90774
 <p>31043</p>	<p>Presses the bearing cone assembly on to the lower driveshaft.</p>
Power Steering Test Gauge Kit	91-38053A05
 <p>10804</p>	<p>Tests the power steering system pressure.</p>
Power Steering Adaptor Kit	91-806908A02
 <p>10803</p>	<p>Adapts power steering test gauge (91-38053A05) to test power steering control valves.</p>
Power Trim Test Gauge Kit	91-52915A6
 <p>3753</p>	<p>Tests circuit pressures for various trim pumps.</p>
Torch Lamp	91-63209
 <p>8776</p>	<p>Heats surfaces to aid in the removal and installation of interference fit engine components.</p>

Flushing Device	91-44357Q 2
 <p>9192</p>	<p>Attaches to the water intakes; provides a fresh water connection when flushing the cooling system or operating the engine.</p>
MCM Tool Overlay Kit	91-877528-1
 <p>24523</p>	<p>MCM Tool Overlay Kit (sheet numbers 10–20) contains 11 overlay sheets and hooks indicating locations for all the Mercury MerCruiser gasoline engine and sterndrive active service tools</p>
Transom Cutout and Drill Fixture	91-43693A 2
 <p>9182</p>	<p>Cuts and drills the boat transom for sterndrive installation.</p>

Notes:

Section 3 - Bravo Sterndrive Tools

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Bravo Sterndrive

Bravo Sterndrive Tool Application Chart

Part No.	Description	Bravo One	Bravo Two	Bravo Three	Blackhawk
11-24156	Hex Nut	X	X	X	X
12-34961	Washer	X	X	X	X
91-12427	Shift Cable Adjustment Tool	X	X	X	X
91-17256	Bearing Retainer Wrench	X	X	X	X
91-17257	Bearing Carrier Retainer Tool		X		
91-17262A1	Shift Cable Installation Tool	X	X	X	X
91-17273	Bushing Removal Tool	X	X	X	
91-17275A1	Bearing and Seal Installation Tool	X	X	X	X
91-17301T1	Clutch Assembly Stand	X	X	X	X
91-17302	Shift Handle Tool	X	X		
91-31106T	Bearing Cup Driver	X	X		
91-31229A7	Bearing Removal and Installation Tool Assembly	X	X	X	X
91-34569A1	Slide Hammer Puller	X	X	X	X
91-37241	Universal Puller Plate	X	X	X	X
91-37299Q2	Lube Gun	X	X	X	X
91-38053A4	Power Steering Gauge Kit	X	X	X	X
91-38756	U-joint Adaptor	X			X
91-42840T	Driveshaft Pinion Gear Shimming Tool	X			
91-43559T	Clamp Plate	X	X	X	
91-43578A1	Bushing/Bearing/Seal Driver	X	X	X	X
91-43579	Tapered Insert Tool	X	X	X	X
91-43693A2	Transom Cutout and Drill Fixture	X	X	X	X
91-44357Q2	Flushing Device	X	X	X	X
91-45497A1	Bellows Expander Tool	X	X	X	X
91-52915A6	Trim Pump Test Gauge Kit	X	X	X	X
91-53459	Backlash Indicator Rod	X	X		
91-55916	Oil Seal Driver	X	X		
91-55918	Bearing Driver	X	X	X	
91-58222A1	Dial Indicator	X	X	X	X
91-61069T	Bearing Carrier Retainer Nut Wrench	X	X	X	
91-61077T	Propeller Shaft/Driveshaft Adaptor	X	X	X	X
91-63209	Torch Lamp	X	X	X	X
91-63616T	Puller Head	X	X	X	X
91-63626	Bearing Cup Driver		X		
91-63638T	Bearing Driver	X	X	X	






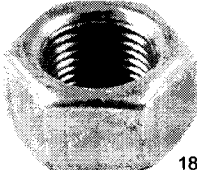
Section 3 - Bravo Sterndrive Tools

Part No.	Description	Bravo One	Bravo Two	Bravo Three	Blackhawk
91-66274	Torque Wrench, lb-in.	X	X	X	X
91-76675T1	Reference Electrode	X	X	X	X
91-78310	Hinge Pin Tool	X	X	X	X
91-805347	Bearing Driver, Bearing Adaptor				X
91-805352T	Bearing Driver, Outer Propeller Shaft Bearing			X	X
91-805356	Bearing Carrier Tool			X	X
91-805358T	Seal Driver, Outer Propeller Shaft			X	X
91-805372	Seal Driver, Bearing Carrier Seal			X	X
91-805374	Bearing Carrier Tool			X	X
91-805374-1	Bearing Carrier Tool			X	
91-805382T	Bearing Retainer Tool			X	
91-805451	Driveshaft Bolt Tightening Tool				X
91-805453	Driveshaft Race Tool				X
91-805454	Driver Handle	X		X	X
91-805457T1	Propeller Nut Tool			X	X
91-805458	Vertical Guide Tool	X	X	X	X
91-805462T	Shimming Tool			X	X
91-805470	Front Bearing Guide	X	X	X	X
91-805471T	Needle Bearing Installation Tool				X
91-805472	Needle Bearing Removal Tool				X
91-805473	Guide Insert	X	X	X	X
91-805474	Vertical Shaft Service Tool	X	X	X	X
91-805475A1	Alignment Tool Assembly	X			X
91-805481	Backlash Indicator Rod			X	X
91-805482	Backlash Indicator Rod			X	X
91-805573T	Holding Fixture				X
91-806192	Spline Backlash Tool			X	X
91-806908A1	Power Steering Adaptor	X	X	X	X
91-813653T	Seal Driver	X	X	X	
91-816242	Puller Jaw	X	X	X	X
91-816243	Guide Plate	X	X	X	X
91-818162	Sleeve Installation Tool	X			
91-818836A1	Drill Bushing Tool Kit	X	X		
91-821709T	Spanner Wrench	X			X
91-83155	Dial Indicator Adaptor Kit	X	X	X	
91-840965A1	Integrated Transom Alignment Assembly	X	X	X	X
91-84996T1	Flushing Kit	X	X	X	X
91-862064A1	Seal Removal Tool			X	X

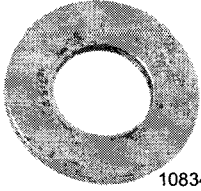

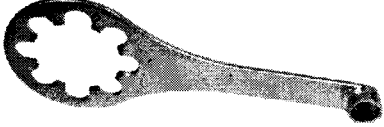
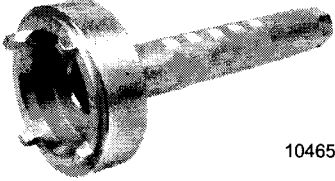


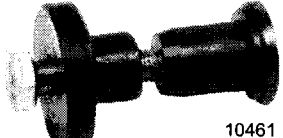
Section 3 - Bravo Stern Drive Tools

Part No.	Description	Bravo One	Bravo Two	Bravo Three	Blackhawk
91-862546	Retention Sleeve Removal Tool	X	X	X	X
91-863738	Driveshaft Retaining Tool			X	
91-864220	Driver Head	X	X	X	
91-881150Q1	Dual Water Pick-Up Gear Case Flush Seal Kit	X			
91-883983	MCM Tool Board Overlay Update Kit	X	X	X	X
91-89865	Bearing Seal and Cup Driver	X	X		
91-89867T	Bearing Driver	X	X	X	
91-90244A1	Puller/Drive Assembly	X	X	X	X
91-90338A1	Puller Bar	X	X		
91-96512	Gear Case Pinion Shimming Tool		X		

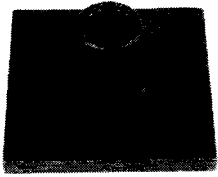

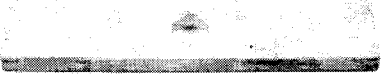
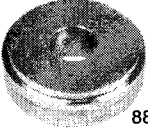

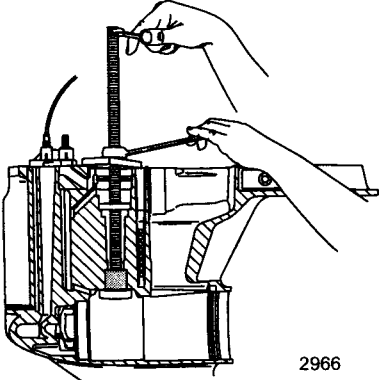
Bravo Stern Drive Tools

Expanding Rod  12538	Snap-On CG40-4 Aids in the removal of bearings; use with Snap-On CG40A-6.
Collet  12534	Snap-On CG40A-6 Aids in the removal of bearings; use with Snap-On CG40-4.
Collet  21601	Snap-On CG40A10 Aids in the removal of bearings; use with expanding rod.
Expanding Rod  17771	Snap-On CG45-4 Aids in the removal of the upper swivel shaft lower bearing in the gimbal housing. Use with Snap-On Collet (CG45-15).
Collet  10774	Snap-On CG45-15 Aids in the removal of the upper swivel shaft lower bearing in the gimbal housing. Use with Snap-On Expanding Rod (CG-45-4).
Hex Nut  18650	11-24156 A 5/8 in. x 18 in. hex nut that aids in the removal and installation of various drive components. May use with Puller Shaft (91-31229); also included in the Bearing Removal and Installation Kit (91-31229A 7).



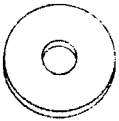
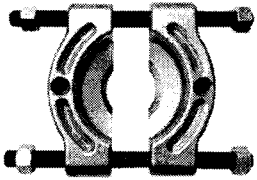
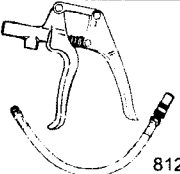
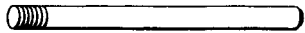
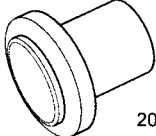
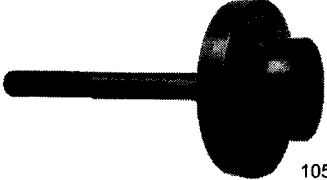
Section 3 - Bravo Sterndrive Tools

Washer	12-34961
 <p>10834</p>	Use on the threaded puller rod between the nut and plate when removing bearings.
Shift Cable Adjustment Tool	91-12427
 <p>9186</p>	Attaches over the shift cable, and aids in proper shift cable adjustment at the shift plate.
U-Joint Retainer Wrench	91-17256
 <p>10482</p>	Removes and installs the u-joint bearing retainer nut on standard Bravo drives.
Bearing Carrier Retainer Tool	91-17257
 <p>10465</p>	Loosens and tightens the bearing carrier retainer nut on Bravo Two.
Shift Cable Installation Tool	91-17262A1
 <p>91-17263</p> <p>10647</p>	Use to set the shift cable adjustments after shift cable installation. Includes the following components: 91-17263 Core Wire Locating Tool 91-17262 Shift Cable Anchor Adjustment Tool
Bushing Removal Tool	91-17273
 <p>10485</p>	Aids in the removal of the shift shaft bushing.
Bearing and Seal Installation Tool	91-17275A1
 <p>10461</p>	Installs the shift shaft bushings and oil seal on all Bravo product.

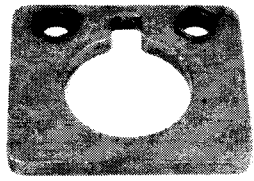



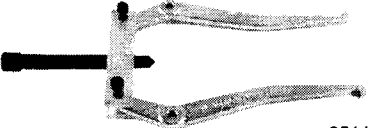
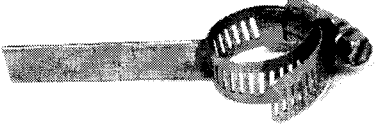

Section 3 - Bravo Sterndrive Tools

Clutch Assembly Stand	91-17301T1
 <p>10515</p>	<p>Holds the clutch assemblies for servicing.</p>
Shift Handle Tool	91-17302
 <p>10688</p>	<p>Positions and removes the shift shaft.</p>
Puller Plate	91-29310
 <p>18600</p>	<p>Aids in the removal and installation of the gimbal bearing, as well as various bearings in the gear housing. Also included in the Bearing Removal and Installation Kit (91-31229A 7).</p>
Bearing Cup Driver	91-31106T
 <p>8882</p>	<p>Installs the driven gear bearing cup.</p>
Puller Shaft 5/8 x 18 Threaded Rod	91-31229
 <p>18604</p>	<p>A 5/8 in. x 18 in. (15.875 mm) long threaded rod which aids in the removal and installation of various engine components. Also included in the Bearing Removal and Installation Kit (91-31229A 7).</p>
Bearing Removal and Installation Kit	91-31229A7
 <p>2966</p>	<p>Installs and removes the bearings in all gearcases. 91-31229A7 tool assembly includes the following components: 11-24156 Hex Nut 12-34961 Washer 91-15755T Bearing Carrier 91-29310 Plate 91-29610 Pilot Plate 91-30366T1 Mandrel 91-31229 Puller Shaft 91-32325T Driver Head 91-32336 Driver Needle Bearing 91-36379 Puller/Head Gear 91-36569T Driver Head 91-36571T Pilot Washer 91-37292 Roller Bearing 91-37311 Driver Head 91-37312 -Driver Head 91-37323 Driver Head Rod 91-37324 Pilot Washer 91-37350T Pilot Mandrel 91-38628T Puller/Driver Head 91-52393 Driver Needle Bearing 91-52394 Head Pull Rod</p>

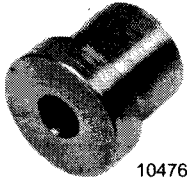
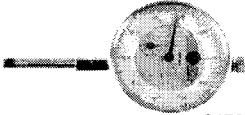
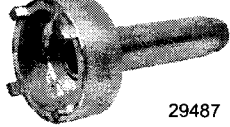
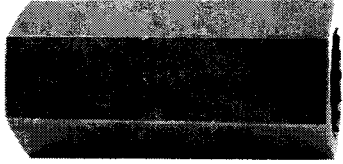
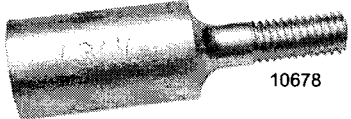

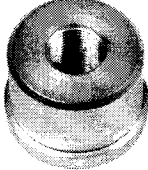
Section 3 - Bravo Sterndrive Tools

<p>Slide Hammer</p>  <p>6761</p>	<p>91-34569A 1</p> <p>Aids in the removal of various engine components. Use puller jaws (91-34570).</p>
<p>Puller Jaws</p>  <p>10681</p>	<p>91-816242</p> <p>Use with either the two-prong or three-prong puller on all drives.</p>
<p>Pilot Washer</p>  <p>29490</p>	<p>91-36571T</p> <p>Used in pinion gear and pinion bearing installation.</p>
<p>Universal Puller Plate</p>  <p>8505</p>	<p>91-37241</p> <p>Removes bearings from gears and the driveshaft.</p>
<p>Grease Gun</p>  <p>8120</p>	<p>91-37299Q 2</p> <p>Aids in the lubrication of key areas on the engine. Allows easy access to grease fittings.</p>
<p>Driver Rod</p>  <p>25431</p>	<p>91-37323</p> <p>Aids in the removal and installation of various bearings and bearing races</p>
<p>U-joint Adapter</p>  <p>20661</p>	<p>91-38756</p> <p>Supports the yoke when disassembling the U-joint.</p>
<p>Driveshaft Pinion Gear Shimming Tool</p>  <p>10586</p>	<p>91-42840T</p> <p>Assists in determining the driveshaft pinion gear shims on Bravo One.</p>




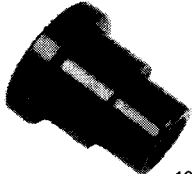
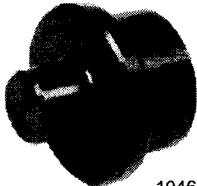

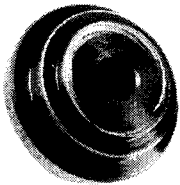
Section 3 - Bravo Sterndrive Tools

<p>Clamp Plate</p>	<p>91-43559T</p>
 <p>10486</p>	<p>Installs onto the gear housing while separated from the driveshaft housing and holds a preload while checking the the gear backlash and bearing preload.</p>
<p>Bushing/Bearing/Seal Driver</p>	<p>91-43578A1</p>
 <p>10484</p>	<p>Installs the transom assembly bushings, bearings, and seals.</p>
<p>Tapered Insert Tool</p>	<p>91-43579</p>
 <p>9197</p>	<p>Removes and installs the tapered insert retainer into the water inlet hose.</p>
<p>Exhaust Bellows Expander Tool</p>	<p>91-45497A1</p>
 <p>10483</p>	<p>Aids in the installation of the exhaust bellows.</p>
<p>Puller Jaws Assembly Puller Bolt</p>	<p>91-46086A1 91-85716</p>
 <p>9514</p>	<p>Removes bearing carrier and bearing races.</p>
<p>Backlash Indicator Rod</p>	<p>91-53459</p>
 <p>10452</p>	<p>Aids in checking gear backlash.</p>
<p>Oil Seal Driver</p>	<p>91-55916</p>
 <p>10848</p>	<p>Installs the bearing carrier oil seals in Bravo Two.</p>

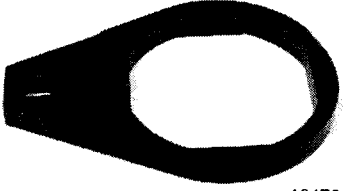
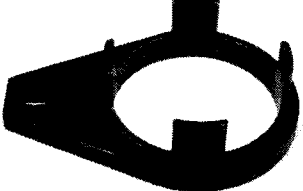
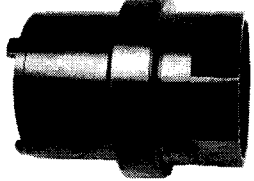



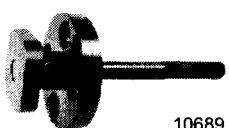
Section 3 - Bravo Sterndrive Tools

Bearing Driver	91-55918
 <p>10476</p>	Aids in the removal and installation of the bearing carrier needle bearings.
Dial Indicator	91-58222A1
 <p>9479</p>	Measures distance, movement, and runout; used for drive system assembly and engine setup.
Bearing Carrier Retainer Nut Wrench	91-61069T
 <p>29487</p>	Installs and removes the bearing carrier retainer nuts on Bravo One.
Propeller Shaft/Driveshaft Adaptor	91-61077T
 <p>10805</p>	Provides a wrench surface to turn the propeller shaft or the driveshaft.
Puller Head	91-63616T
 <p>10678</p>	Removes the upper swivel shaft on gimbal rings.
Bearing Cup Driver	91-63626
 <p>10473</p>	Installs the bearing cup into the bearing carrier.
Bearing Driver	91-63638 1
 <p>10477</p>	Removes and installs the lower driveshaft pinion bearing.

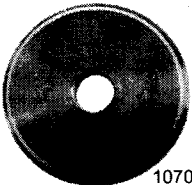



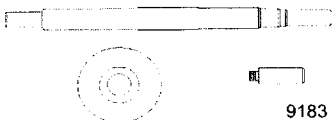

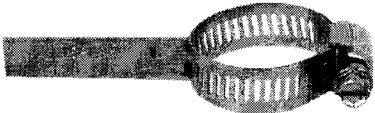

Section 3 - Bravo Sterndrive Tools

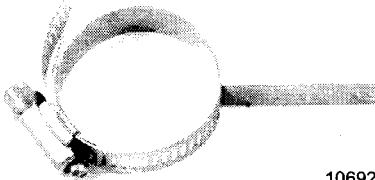
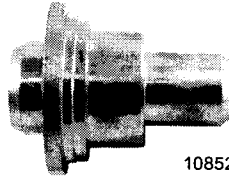
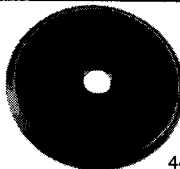



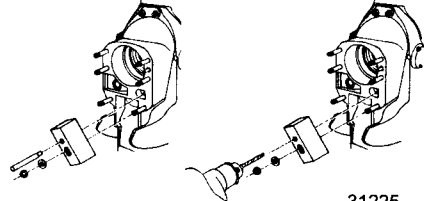
Torque Wrench, lb. in.	91-66274
 <p>10829</p>	Dial type torque wrench that sets torque from 9 to 150 lb. in.; 3/8 in. drive.
Bearing Cup Driver	91-67443T
 <p>10838</p>	Installs the driveshaft bearing cup into the gear housing, and the bearing cup into the bearing carrier.
Hinge Pin Tool	91-78310
 <p>10672</p>	Removes and installs the hinge pins.
Outer Propeller Shaft Bearing Driver	91-805352T
 <p>10479</p>	Installs the roller bearing into the outer propeller shaft.
Bearing Carrier Tool	91-805356
 <p>10469</p>	Aids in the installation of the bearing carrier needle bearing.
Outer Propeller Shaft Seal Driver	91-805358T
 <p>10684</p>	Installs the seals in the outer propeller shaft.
Bearing Carrier Seal Driver	91-805372
 <p>10683</p>	Aids in the installation of seals into the bearing carrier.

Section 3 - Bravo Sterndrive Tools



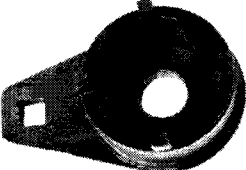
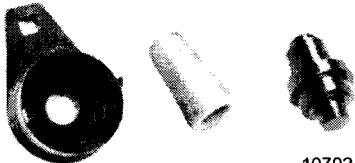
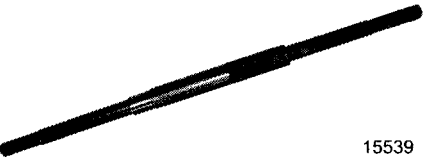
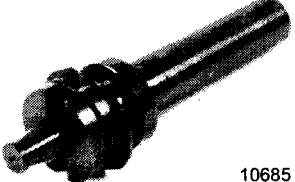

Bearing Carrier Tool	91-805374
 <p>10470</p>	Aids in the removal and installation of the outer propeller shaft bearing carrier on the Bravo Three. Also used with Bearing Retainer Tool (91-805382T) to remove propeller shaft retainer nut.
Bearing Carrier Tool	91-805374-1
 <p>10471</p>	Removes and installs the driveshaft bearing carrier on the Bravo Three.
Bearing Retainer Tool	91-805382T
 <p>10481</p>	Removes and installs the outer propeller shaft bearing retainer.
Driveshaft Race Tool	91-805453
 <p>10587</p>	Aids in the installation of the lower driveshaft bearing race.
Driver Handle	91-805454
 <p>10590</p>	Use with Front Bearing Guide (91-805470) for installation of the front bearing.
Propeller Nut Tool	91-805457T 1
 <p>10677</p>	Aids in the removal and installation of the front propeller nut.
Shimming Tool	91-805462T
 <p>10689</p>	Aids in measuring the pinion height.

Section 3 - Bravo Sterndrive Tools

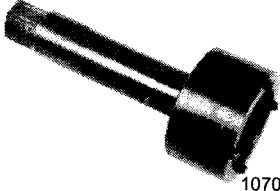
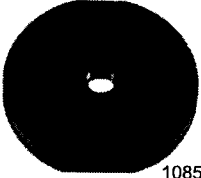




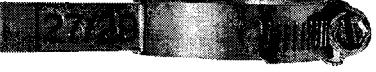

Front Bearing Guide	91-805470
 <p>10701</p>	Guides the installation of the front bearing into the drives.
Needle Bearing Installation Tool	91-805471T
 <p>10673</p>	Installs the pinion gear needle bearings into the lower driveshaft bores.
Needle Bearing Removal Tool	91-805472
 <p>10674</p>	Aids in the removal of the pinion gear needle bearings.
Guide Insert Tool	91-805473
 <p>20864</p>	Inserts into the Bearing Cup Driver (91-31106T) when installing the front driven gear bearing cup.
Alignment Tool Assembly	91-805475A 1
 <p>9183</p>	Used to align the engine to the standard Bravo transom assembly for sterndrive installation.
Alignment Bar	8M2001017
 <p>26831</p>	Aids in aligning the engine to the transom assembly for sterndrive installation.
Backlash Indicator Rod	91-805481
 <p>10453</p>	Indicates the inner propeller shaft backlash.
Backlash Indicator Rod	91-805482
 <p>10453</p>	Indicates the outer propeller shaft backlash.

<p>Spline Backlash Tool</p>	<p>91-806192</p>
 <p>10692</p>	<p>Measures the propeller-shaft-to-gear-spline backlash on V-blocks.</p>
<p>Seal Driver</p>	<p>91-813653T</p>
 <p>10852</p>	<p>Installs the U-joint oil seal into the bearing carrier. Also used to pilot the puller rod for the installation of the gear housing needle bearing.</p>
<p>Guide Plate</p>	<p>91-816243</p>
 <p>4481</p>	<p>Centers the rod used to drive in the forward gear bearing on a standard rotation gearcase, and the reverse gear bearing on a counter rotation gearcase.</p>
<p>Sleeve Installation Tool</p>	<p>91-818162</p>
 <p>10823</p>	<p>Installs the aluminum sleeve into the U-joint bellows.</p>
<p>Trim Cylinder End Cap Tool</p>	<p>91-821709T</p>
 <p>10691</p>	<p>Allows easy removal of the trim cylinder end caps. Required if tilt limit spacers are to be installed or if the trim in limit spacer is to be removed (to allow additional trim in range).</p>
<p>Dial Indicator Adaptor</p>	<p>91-83155</p>
 <p>2999</p>	<p>Dial indicator holding fixture.</p>
<p>Drill Bushing Tool Kit</p>	<p>91-818836A1</p>
 <p>31225</p>	<p>Aids in replacing a shift cable in Bravo bell housing S/N 0D542204 and below to enlarge hole to 7/16" for new cable.</p>


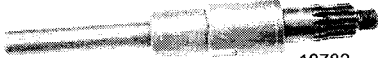


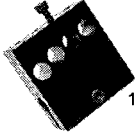
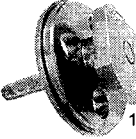
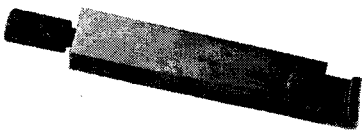


Section 3 - Bravo Sterndrive Tools

Bearing Carrier Oil Seal Installer	91-840385
 <p>10698</p>	Installs the needle bearing and oil seals into the bearing carrier.
Bearing Carrier Installation Tool	91-840388
 <p>9518</p>	Protects the seals when installing the bearing carrier onto the propeller shaft.
Bearing Carrier Retainer Nut Wrench	91-840393
 <p>9449</p>	Installs the bearing carrier retainer nut on heavy-duty propeller shafts.
Propeller Shaft Tool Kit	91-840393A1
 <p>10702</p>	Aids in the installation of the bearing carrier retainer with a heavy-duty propeller shaft installed on the lower unit.
ITS Alignment Tool	91-840965A1
 <p>15539</p>	Used to align the engine to the integrated or standard Bravo transom assembly for sterndrive installation.
Seal Removal Tool	91-862064A 1
 <p>10685</p>	Aids in the removal of the bearing carrier oil seal.
Spanner Wrench for L-18 U-joint Bearing Retainer	91-862219A1
 <p>10705</p>	Removes and installs the driveshaft bearing retainer.

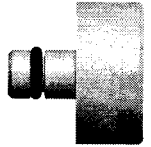

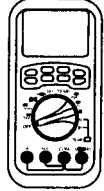
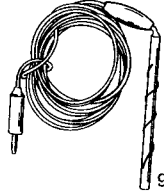
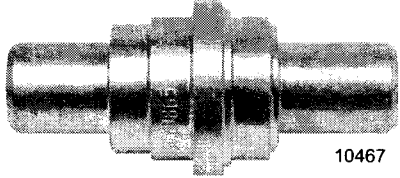
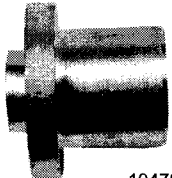
Section 3 - Bravo Sterndrive Tools

Steel Bearing Adaptor Socket	91-862531
 <p>10706</p>	Removes and installs the steel bearing adaptor.
Retention Sleeve Removal Tool	91-862546
 <p>10851</p>	Removes the aluminum sleeve from the U-joint bellows of all the Bravo sterndrives, serial number 0L999999 and below.
Driveshaft Retaining Tool	91-805381
 <p>10843</p>	Used to hold the bearings and the lower driveshaft while checking backlash on pre-2000 lower units with smaller diameter driveshaft.
Seal Driver Tool	91-865050
 <p>10775</p>	Aids in the removal and installation of the U-joint oil seal of the bearing retainer nut.
Gear Lash Flag 16/19	91-865116
 <p>10844</p>	Aids in checking the gear lash for 16/19 tooth gears in the driveshaft housing.
Gear Lash Flag 27/32	91-865080
 <p>10799</p>	Aids in checking the gear lash for 27/32 tooth gears in the driveshaft housing.
Gear Lash Flag 27/29	91-865081
 <p>10800</p>	Aids in checking the gear lash for 27/29 tooth gears in the driveshaft housing.
Gear Lash Flag 23/30	91-865082
 <p>10872</p>	Aids in checking the gear lash for 23/30 tooth gears in the driveshaft housing.

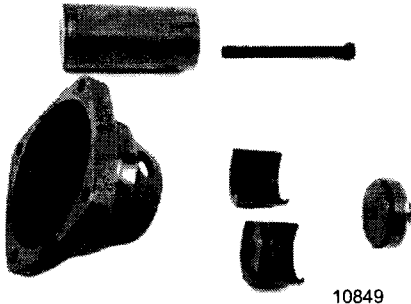

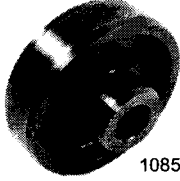



Section 3 - Bravo Sterndrive Tools

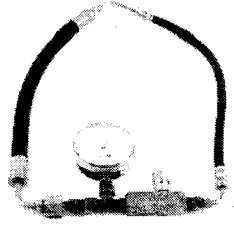
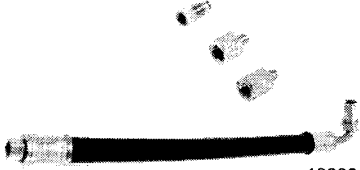
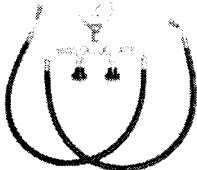


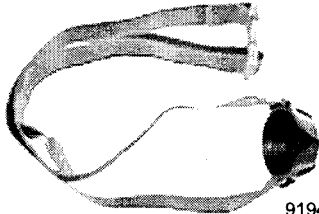
<p>Stub Shaft for Bravo X Series</p>  <p>10795</p>	<p>91-865083</p> <p>Replaces the U-joint assembly during the shimming process of the driveshaft housing.</p>
<p>Stub Shaft for Standard Bravo</p>  <p>10782</p>	<p>91-865084</p> <p>Replaces the U-joint assembly during the shimming process of the driveshaft housing.</p>
<p>Clamp Block and Handle Tool</p>  <p>10779</p>	<p>91-865085</p> <p>Used to move the stub shaft when reading the gear lash on the driveshaft housing.</p>
<p>Adaptor Rod Tool</p>  <p>10464</p>	<p>91-865086</p> <p>Holds the measuring tools for shimming the driveshaft housing.</p>
<p>Dial Indicator Holding Block</p>  <p>10781</p>	<p>91-865097</p> <p>Secures the dial indicator tool in proper location when shimming the driveshaft housing.</p>
<p>Pinion Gear Shimming Tool</p>  <p>10778</p>	<p>91-865114</p> <p>Measures the u-joint pinion (drive) gear depth of the driveshaft housing.</p>
<p>Driven Gear Clamping Tool</p>  <p>10472</p>	<p>91-865115</p> <p>Prevents driven gear movement when measuring the gear lash of the driveshaft housing.</p>
<p>Snap-Ring Driver</p>  <p>21565</p>	<p>91-866107</p> <p>Aids in the removal of the cross bearing snap rings. Part of the Cross Bearing Removal and Installation Kit (91-866107A01).</p>
<p>Cross Bearing Mandrel</p>  <p>31398</p>	<p>91-866108</p> <p>Aids in the removal and installation of the bearing caps on the cross bearings.</p>

Section 3 - Bravo Sterndrive Tools


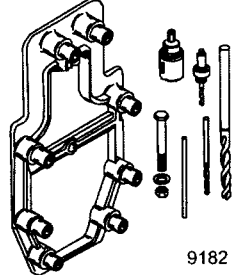
<p>Cross Bearing Head Press</p>	<p>91-866109</p>
 <p>31397</p>	<p>Aids in the removal and installation of the bearing caps on the cross bearings.</p>
<p>Cross and Bearing Vise Press</p>	<p>Obtain locally</p>
 <p>31400</p>	<p>Aids in removal and installing caps on the cross bearing assembly.</p>
<p>DMT 2004 Digital Multimeter</p>	<p>91-892647A01</p>
 <p>4516</p>	<p>Measures RPM on spark ignition (SI) engines, ohms, amperes, AC and DC voltages; records maximums and minimums simultaneously, and accurately reads in high RFI environments.</p>
<p>Reference Electrode</p>	<p>91-76675T 1</p>
 <p>9188</p>	<p>Senses and electrical current in the water when testing the MerCathode system. Use to check hull potential.</p>
<p>Bearing Seal and Cup Driver</p>	<p>91-89865</p>
 <p>10467</p>	<p>Aids in the installation of the bearing carrier seals and bearing cup.</p>
<p>Bearing Driver</p>	<p>91-89867T</p>
 <p>10478</p>	<p>Aids in the installation of the driveshaft needle bearings.</p>

Section 3 - Bravo Sterndrive Tools

<p>Puller/Drive Assembly</p>	<p>91-90244A1</p>
 <p>10849</p>	<p>Removes and installs the driveshaft housing bearings and sleeves. Assembly includes the following and can be purchased separately: 91-90777T1 Puller Jaws 91-90774 Puller Guide 91-90775 Puller Bolt 91-90244T Driver Guide 91-90773T Driver Head</p>
<p>Needle Bearing and Outer Race Installation Tool</p>	<p>91-864220</p>
 <p>10458</p>	<p>Aids in the installation the needle bearing and the outer radial bearing on new style gears in the older Bravo drives (1999 and earlier).</p>
<p>Bearing Installation Tool</p>	<p>91-862530</p>
 <p>10855</p>	<p>Aids in the installation of the needle bearing and outer radial bearing.</p>
<p>Puller Bar</p>	<p>91-90338A1</p>
 <p>10457</p>	<p>Aids in the removal of the bearing carrier.</p>
<p>Gearcase Pinion Shimming Tool</p>	<p>91-96512</p>
 <p>10670</p>	<p>Aids in measuring the gearcase pinion height on Bravo Two.</p>
<p>Plug</p>	<p>922-38609</p>
 <p>8862</p>	<p>Aids in bleeding the in/down circuit on the remote trim pump.</p>

Power Steering Test Gauge Kit	91-38053A05
 <p>10804</p>	Tests the power steering system pressure.
Power Steering Adaptor Kit	91-806908A02
 <p>10803</p>	Adapts power steering test gauge (91-38053A05) to test power steering control valves.
Power Trim Test Gauge Kit	91-52915A6
 <p>3753</p>	Tests circuit pressures for various trim pumps.
Flushing Device	91-44357Q 2
 <p>9192</p>	Attaches to the water intakes; provides a fresh water connection when flushing the cooling system or operating the engine.
Flushing Kit	91-849996T 1
 <p>9195</p>	Use for flushing gearcases with low water inlets.
Dual Water Pick-up Flush Gearcase Seal Kit	91-881150K 1
 <p>9194</p>	Blocks off the front water inlet holes on the dual water inlet gearcases.

Section 3 - Bravo Sterndrive Tools

Torch Lamp	91-63209
 <p>8776</p>	Heats surfaces to aid in the removal and installation of interference fit engine components.
Transom Cutout and Drill Fixture	91-43693A 2
 <p>9182</p>	Cuts and drills the boat transom for sterndrive installation.

Section 4 - TR/TRS Sterndrive

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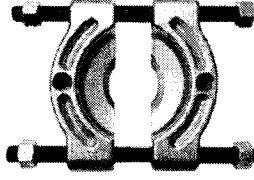

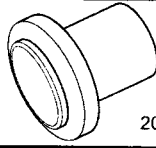
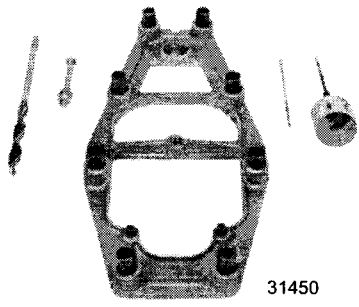
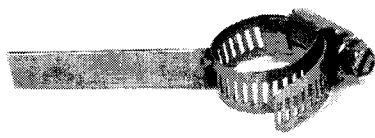

TR/TRS Sterndrive

TR/TRS Sterndrive Tool Application Chart

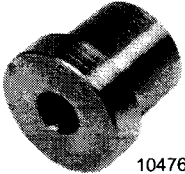
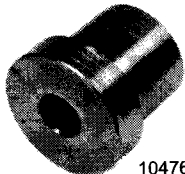
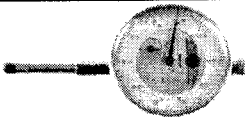

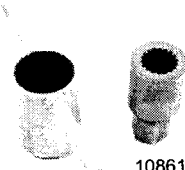
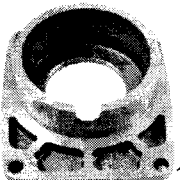

Part No.	Description	TR	TRS
91-34569A1	Slide Hammer Puller	X	X
91-37241	Universal Puller Plate	X	X
91-38053A4	Power Steering Test Gauge Kit	X	X
91-38277A2	Tab Washer Pliers	X	X
91-38756	U-joint Adaptor	X	X
91-44357Q2	Flushing Device	X	X
91-55852A2	Transom Cutout and Drill Fixture	X	X
91-53459	Backlash Indicator Rod	X	
91-52915A6	Power Trim Test Gauge Kit	X	X
91-55916	Oil Seal Driver	X	
91-55918	Bearing Driver	X	X
91-55919	Driver Head	X	X
91-58222A1	Dial Indicator	X	X
91-63209	Torch Lamp	X	X
91-63619T	Seal/Bearing Driver	X	X
91-63620A1	Bearing Nut Wrench and Driveshaft Socket	X	X
91-63625T	Bearing Holder	X	X
91-63626	Bearing Cup Driver	X	
91-63638T	Bearing Driver	X	X
91-66274	Torque Wrench, lb-in.	X	X
91-67441	Gear Housing Pinion Gear Shimming Tool		X
91-67443T	Bearing Cup Driver	X	X
91-68891T	Bearing Driver		X
91-78310	Hinge Pin Tool	X	X
91-805475A1	Alignment Tool Assembly		X
91-806908A1	Power Steering Adaptor	X	X
91-816242	Puller Jaws	X	X
91-89897	Dial Indicator Holding Tool	X	X
91-98171T	Driveshaft Housing Gear Shimming Tool	X	X

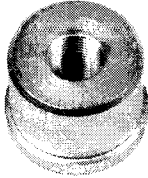

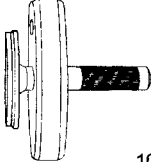

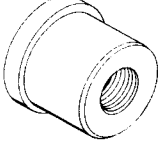

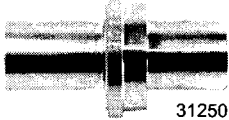
TR/TRS Sterndrive Tools

Slide Hammer	91-34569A 1
 6761	Aids in the removal of various engine components. Use with puller jaws.

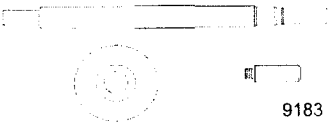
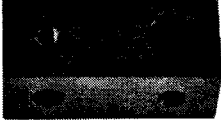
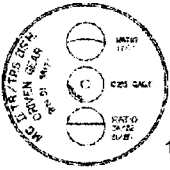
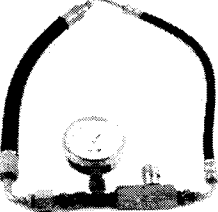

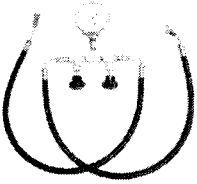
<p>Puller Jaws</p>	<p>91-816242</p>
 <p>10681</p>	<p>Use with either the two prong or three prong puller on all drive units.</p>
<p>Universal Puller Plate</p>	<p>91-37241</p>
 <p>8505</p>	<p>Removes bearings from gears and the driveshaft.</p>
<p>Tab Washer Pliers</p>	<p>91-38277A2</p>
 <p>10827</p>	<p>Bends the propeller tab washers off of the tab nut.</p>
<p>U-joint Adaptor</p>	<p>91-38756</p>
 <p>20661</p>	<p>Supports the yoke when disassembling the U-joint.</p>
<p>Transom Cutout and Drill Fixture</p>	<p>91-55852A2</p>
 <p>31450</p>	<p>Cuts and drills the boat transom for sterndrive installation.</p>
<p>Backlash Indicator Rod</p>	<p>91-53459</p>
 <p>10452</p>	<p>Aids in checking gear backlash.</p>
<p>Oil Seal Driver</p>	<p>91-55916</p>
 <p>10848</p>	<p>Installs the bearing carrier oil seals.</p>



Section 4 - TR/TRS Sterndrive

Bearing Driver	91-55918
 <p>10476</p>	Aids in the removal and installation of the bearing carrier needle bearings.
Driver Head	91-55919
 <p>10476</p>	Removes bearings and seals; installs needle bearings into the bearing carrier.
Dial Indicator	91-58222A1
 <p>9479</p>	Measures distance, movement, and runout; used for drive system assembly and engine setup.
Seal/Bearing Driver	91-63619T
 <p>10865</p>	Installs the driveshaft bearing cup and U-joint oil seal in the drive shaft housing of the TR and TRS sterndrives. Also installs the TR drive unit propeller shaft bearing cup.
Bearing Nut Wrench and Driveshaft Socket	91-63620A1
 <p>10861</p>	Remove and installs the upper driveshaft bearing nut.
Bearing Holder	91-63625T
 <p>10860</p>	Supports the drive gear bearing when removing and installing the U-joint nut.
Bearing Cup Driver	91-63626
 <p>10473</p>	Installs the bearing cup into the bearing carrier.

Bearing Driver	91-63638 1
 <p style="text-align: center;">10477</p>	Removes and installs the lower driveshaft pinion bearing.
Torque Wrench, lb. in.	91-66274
 <p style="text-align: center;">10829</p>	Dial-type torque wrench that sets torque from 9 to 150 lb. in.; 3/8 in. drive.
Gear Housing Pinion Gear Shimming Tool	91-67441
 <p style="text-align: center;">10864</p>	Determines the pinion gear clearance in the TRS gear housings.
Bearing Cup Driver	91-67443T
 <p style="text-align: center;">10838</p>	Installs the driveshaft bearing cup into the gear housing, and the bearing cup into the bearing carrier.
Bearing Driver	91-68891T
 <p style="text-align: center;">10859</p>	Removes lower driveshaft bearing from the gear housing of the TRS sterndrives.
Hinge Pin Tool	91-78310
 <p style="text-align: center;">10672</p>	Removes and installs the hinge pins.
Oil Seal Driver	91-55916
 <p style="text-align: center;">31250</p>	Installs oil seals in TR, Bravo One and Bravo Two drive unit bearing carriers.

Section 4 - TR/TRS Sterndrive

<p>Alignment Tool Assembly</p>	<p>91-805475A 1</p>
 <p>9183</p>	<p>Used to align the engine to the standard Bravo transom assembly for sterndrive installation.</p>
<p>Dial Indicator Holding Tool</p>	<p>91-89897</p>
 <p>29496</p>	<p>Secures the dial indicator to gear housing when checking backlash.</p>
<p>Driveshaft Housing Gear Shimming Tool</p>	<p>91-98171T</p>
 <p>10862</p>	<p>Determines the driveshaft housing drive gear clearance on the TR and TRS sterndrives.</p>
<p>Power Steering Test Gauge Kit</p>	<p>91-38053A05</p>
 <p>10804</p>	<p>Tests the power steering system pressure.</p>
<p>Power Steering Adaptor Kit</p>	<p>91-806908A02</p>
 <p>10803</p>	<p>Adapts power steering test gauge (91-38053A05) to test power steering control valves.</p>
<p>Power Trim Test Gauge Kit</p>	<p>91-52915A6</p>
 <p>3753</p>	<p>Tests circuit pressures for various trim pumps.</p>

Flushing Device	91-44357Q 2
 <p style="text-align: right;">9192</p>	<p>Attaches to the water intakes; provides a fresh water connection when flushing the cooling system or operating the engine.</p>
Torch Lamp	91-63209
 <p style="text-align: right;">8776</p>	<p>Heats surfaces to aid in the removal and installation of interference fit engine components.</p>

Notes:

Section 5 - Gasoline Engine

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Gasoline Engine

Gasoline Engine Tool Application Chart

Part No.	Description	GM	Ford	4 Cyl (3.7L)
91-14822	Oil Pump Alignment Tool			X
91-18078	Fuel Fitting Connector	X		X
91-24697	Piston Ring Expander	X	X	X
91-35547	Engine Coupler Wrench	X		X
91-38053A4	Power Steering Gauge Kit	X	X	X
91-42447	Microfiche Viewer (120v)	X	X	X
91-42460	Microfiche Viewer (240v) International	X	X	X
91-52024A1	Remote Starter Switch	X	X	X
91-52344	Flywheel Holder	X	X	X
91-59339	Tachometer/Dwell Meter	X	X	X
91-63209	Torch Lamp	X	X	X
91-63998A1	Spark Chamber Assembly	X	X	X
91-66273	Rocker Stopper	X		
91-66274	Torque Wrench, lb-in.	X	X	X
91-805475A1	Alignment Tool Assembly	X	X	X
91-805918A1	Fuel Shut-Off Tool	X		
91-806141A1	Probe Assembly	X		
91-806141A2	Probe Assembly	X		
91-806794A1	Installation Jig	X		
91-806901	Fuel Pressure Tee	X		X
91-806908A1	Power Steering Adaptor	X	X	X
91-809711	ES Torx Driver	X		
91-809929	Oil Pump Pickup Installer	X		
91-809938	Oil Pump Pickup Installer	X		
91-815234	Dyno Model 4000	X	X	X
91-818812A1	Ignition Timing (EST)	X		
91-828363A1	Tool Drill Fixture	X	X	X
91-830230T	Spark Air Gap Tool	X		
91-861540A1	DDT Adaptor Harness (Carb Thunderbolt V)	X		
91-86197	Idle Mixture Socket	X		
91-863375A1	Alignment Hook	X		
91-877528-1	MCM Tool Overlay Kit	X		
91-881833A2	Fuel Pressure Gauge Kit	X	X	X
91-883502	Air Line Cutter	X		
91-883983	MCM Tool Overlay Update Kit	X		
91-93656A1	Pulley Pusher Installer	X	X	X
91-99379	Portable Timing Light	X	X	X

Part No.	Description	GM	Ford	4 Cyl (3.7L)
91-99750A1	DVA/Multimeter Kit	X	X	X

EFI/MPI Engine Tool Application Chart

Part No.	Description	4.3L	5.0L	5.7L 350	6.2L	454 7.4L	502
91-18078	Fuel Fitting Connector		X	X			
91-803135	Fuel Pressure Gauge Adapter	X	X	X	X	X	X
91-803999	Mercury MerCruiser DDT Cartridge v2.0 (MEFI)	X	X	X	X	X	X
91-805747A 2	Timing Tool (MEFI)	X	X	X	X	X	X
91-805918A 1	Fuel Shut-Off Tool	X	X	X	X	X	X
91-806901	Fuel Pressure Tee	X	X	X		X	
91-822560A 2	DDT Harness Assembly (MEFI)			X	X	X	X
91-881833A 2	Fuel Pressure Gauge Kit	X	X	X	X	X	X
91-99379	Portable Timing Light	X	X	X	X	X	X
91-99750A1	DVA / Multimeter Kit	X	X	X	X	X	X

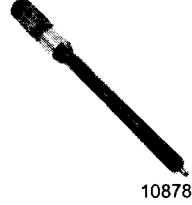
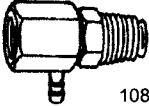
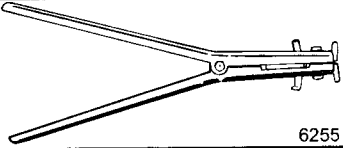
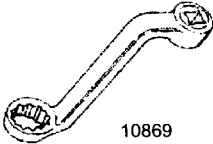
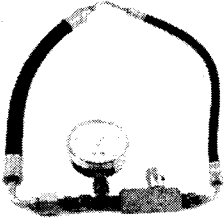
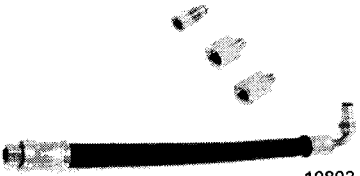
ECM/PCM Engine Tool Application Chart


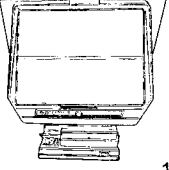

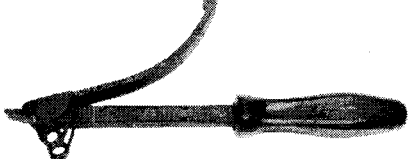
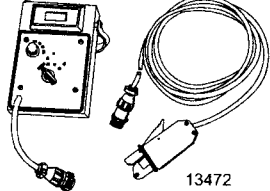

Part No.	Description	4.3L MPI	5.0L MPI	350 MPI Horizon	6.2L MX MPI Horizon	496 / 8.1L MPI
91-803135	Fuel Pressure Gauge Adapter	X	X	X	X	X
91-805918A1	Fuel Shut-Off Tool	X	X	X	X	X
91-822560T12	DDT Adapter Harness (555)	X	X	X	X	X
91-822560A13	DDT Harness Assembly (555)	X	X	X	X	X
91-880118A2	Mercury MerCruiser DDT Cartridge v1.2 (555)	X	X	X	X	X
91-881833A2	Fuel Pressure Gauge Kit	X	X	X	X	X
91-99379	Portable Timing Light	X	X	X	X	X

Section 5 - Gasoline Engine

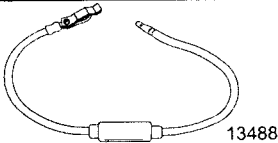


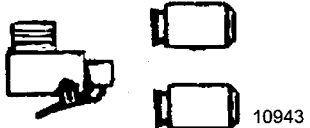


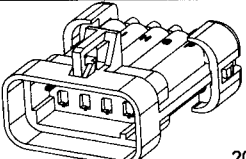
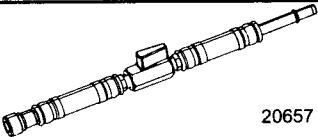
Part No.	Description	4.3L MPI	5.0L MPI	350 MPI Horizon	6.2L MX MPI Horizon	496 / 8.1L MPI
91-99750A1	DVA / Multimeter Kit	X	X	X	X	X

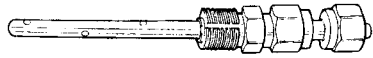

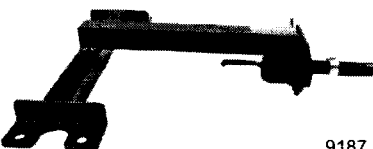

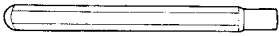
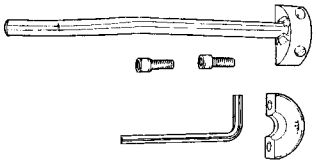
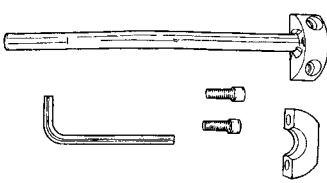
Gasoline Engine and EFI/MPI Tools

<p>Oil Pump Alignment Tool</p>  <p>10878</p>	<p>91-14822</p> <p>Use to align the oil pump during installation of the 4-cylinder Mercury Mercruiser (224) cid engines only.</p>
<p>Fuel Fitting Connector</p>  <p>10871</p>	<p>91-18078</p> <p>Installed between the fuel line and the carburetor on 2-barrel MerCab and 4-barrel Weber carburetors.</p>
<p>Piston Ring Expander</p>  <p>6255</p>	<p>91-24697</p> <p>Expands piston rings for removal and installation.</p>
<p>Engine Coupler Wrench</p>  <p>10869</p>	<p>91-35547</p> <p>Installs and removes the engine coupler and torques the bolts on the couplers that mount directly to the crankshaft; 1/2 in. drive.</p>
<p>Power Steering Test Gauge Kit</p>  <p>10804</p>	<p>91-38053A05</p> <p>Tests the power steering system pressure.</p>
<p>Power Steering Adaptor Kit</p>  <p>10803</p>	<p>91-806908A02</p> <p>Adapts power steering test gauge (91-38053A05) to test power steering control valves.</p>

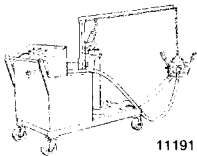

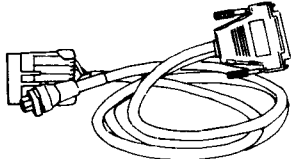

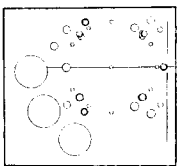


Microfiche Viewer (120v)	91-42447
 <p>11194</p>	Views the microfiche parts lists.
Microfiche Viewer (240v) International	91-42460
 <p>11194</p>	Views the microfiche parts lists.
Remote Starter Switch	91-52024A1
 <p>10882</p>	Provides a remote starter button to crank the engine when performing service procedures.
Flywheel Holding Tool	91-52344
 <p>4738</p>	Holds or turns the flywheel while making engine repairs, also used to torque the flywheel or the engine coupler.
Service Tachometer/Dwell Meter	91-59339
 <p>13472</p>	Aids in checking engine RPM (0-10,000); also checks the dwell on breaker point ignition systems.
Torch Lamp	91-63209
 <p>8776</p>	Heats surfaces to aid in the removal and installation of interference fit engine components.



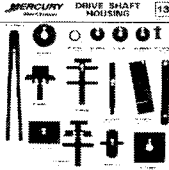
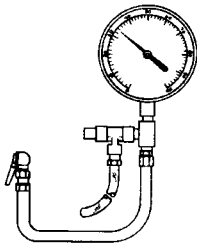
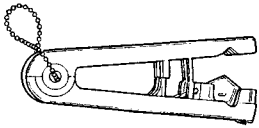
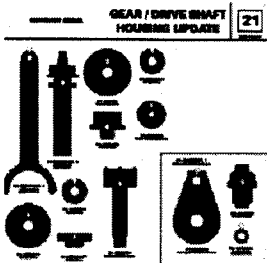
Section 5 - Gasoline Engine

Spark Gap Tester	91-63998A 1
 <p>13488</p>	Provides a visual indication of spark/coil efficiency.
Rocker Stopper	91-66273
 <p>10884</p>	Plugs the oil holes in the rocker arms to eliminate oil spray while adjusting the valve lash.
Torque Wrench, lb. in.	91-66274
 <p>10829</p>	Dial-type torque wrench that sets torque from 9 to 150 lb. in.; 3/8 in. drive.
Fuel Pressure Gauge Kit	91-803135
 <p>10943</p>	Allows an older fuel pressure gauge to attach to either GM or Mercury MerCruiser Schrader valve.
Alignment Tool Assembly	91-805475A 1
 <p>9183</p>	Used to align the engine to the Standard Bravo Transom Assembly for sterndrive installation.
Alignment Bar	8M2001017
 <p>26831</p>	Aids in aligning the engine to the transom assembly for sterndrive installation.
Timing Jumper Plug	91-805747A2
 <p>20654</p>	Locks the electronic spark trigger ignition system in base timing mode to set the initial ignition timing; also used as a jumper lead for testing various circuits.
Fuel Shut-Off Tool	91-805918A1
 <p>20657</p>	Used to perform fuel system pressure tests.


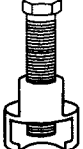


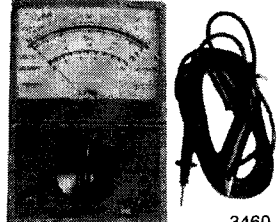
<p>Probe assembly</p>	<p>91-806141A1</p>
 <p>11198</p>	<p>Measures SAV-regulated emissions on early models with a test port mounted to the side of the exhaust elbow.</p>
<p>Probe Assembly</p>	<p>91-806141A2</p>
 <p>11199</p>	<p>Measures SAV-regulated emissions on models with a test port mounted to the top of the exhaust elbow.</p>
<p>Installation Jig</p>	<p>91-806794A02</p>
 <p>9187</p>	<p>Locates the engine mounts when installing engine.</p>
<p>Fuel Pressure Tee</p>	<p>91-806901</p>
 <p>10873</p>	<p>The Fuel Pressure Tee has a Schrader valve that can be used on MerCarb, Weber, or TBI models.</p>
<p>ES Torx Driver</p>	<p>91-809711</p>
 <p>11192</p>	<p>Removes the screws that hold the solenoid on Delco PG260 starter motors.</p>
<p>Oil Pump Pickup Installer</p>	<p>91-809929</p>
 <p>11196</p>	<p>Installs the 5/8 in. (16 mm) diameter oil pickup tube and screen into the engine's oil pump.</p>
<p>Oil Pump Pickup Installer</p>	<p>91-809938</p>
 <p>11197</p>	<p>Installs the 3/4 in. (19 mm) diameter oil pickup tube and screen into the engine's oil pump.</p>

Section 5 - Gasoline Engine

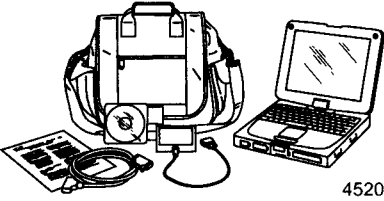
Dyno Model 4000	91-815234
 <p>11191</p>	<p>Connects to the propeller shaft on sterndrive models and allows engine operation simulating a loaded condition while the boat is on a trailer. Dyno maximum hp is 575 hp.</p>
Ignition Timing Cable	91-818812A 1
 <p>13427</p>	<p>Locks the electronic spark trigger ignition system in base timing mode to set the initial ignition timing; also used as a jumper lead for testing various circuits.</p>
DDT Harness Assembly (MEFI)	91-822560A2
 <p>10945</p>	<p>Harness connects to DDT Scan Tool Kit. Use with MEFI 1, MEFI 2, and MEFI 3 ECM models.</p>
Adaptor Harness	84-822560A13
 <p>5826</p>	<p>Data link harness between engine and Computer Diagnostic System (CDS).</p>
Tool Drill Fixture	91-828363A1
 <p>24885</p>	<p>Aids in the mounting of the following Panel Mount Controls: Commander300, 3000 Classic, Commander 2000.</p>
Spark Gap Tester	91-850439T 1
 <p>7513</p>	<p>Provides a visual indication of spark/coil efficiency.</p>
Idle Mixture Socket	91-86197
 <p>10874</p>	<p>Turns the idle mixture screws on Rochester 4-barrel carburetors.</p>

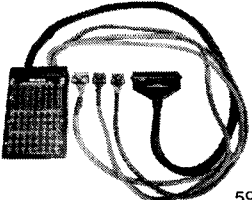
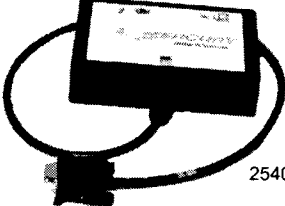
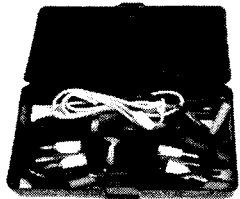
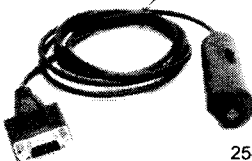


<p>Alignment Hook</p>	<p>91-863375A 1</p>
 <p>9190</p>	<p>Assists during engine alignment.</p>
<p>TKS Carburetor Mixture Adjusting Tool</p>	<p>91-866201</p>
 <p>25739</p>	<p>Adjusts idle mixture screw on TKS MerCarb.</p>
<p>MCM Tool Board Overlay Kit</p>	<p>91-877528-1</p>
 <p>24523</p>	<p>MCM Tool Overlay Kit (sheet numbers 10–20) contains 11 overlay sheets and hooks indicating locations for all the Mercury MerCruiser gasoline engine and sterndrive active service tools</p>
<p>Fuel Pressure Gauge Kit</p>	<p>91-881833A03</p>
 <p>rms32</p>	<p>Tests the fuel pump pressure; can be used to relieve fuel pressure.</p>
<p>Air Line Cutter</p>	<p>91-883502</p>
 <p>24887</p>	<p>Prevents collapsing when cutting the air lines for the water drain system on 496/8.1 and Mercury MerCruiser models equipped with the air-actuated water drain system.</p>
<p>MCM Tool Board Overlay Update Kit</p>	<p>91-883983</p>
 <p>24888</p>	<p>Updates the original MCM Tool Board Overlay Kit 91-877528. This sheet has 12 additional tools for the Bravo XR, XZ, and Bravo Three sterndrives.</p>

Section 5 - Gasoline Engine

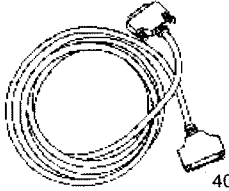
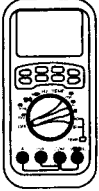
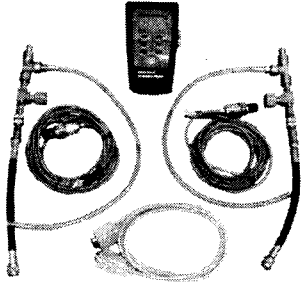
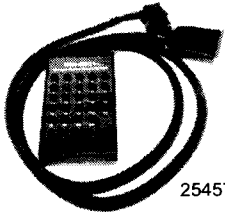
Pulley Pusher Installer	91-93656A1
 <p>10047</p>	Installs the pulley onto the power steering pump.
Power Steering Pump Pulley Remover	Kent Moore J-25034-C
 <p>18598</p>	Removes the pulley on the power steering pump.
Power Steering Pump Pulley Remover	Kent Moore J-21239
 <p>25952</p>	Removes the pulley on the DHB power steering pumps and water pumps with smaller shafts.
Timing Light	91-99379
 <p>11561</p>	Used to check ignition timing.
DVA/Multimeter Kit	91-99750A 1
 <p>3460</p>	Tests the electrical and ignition systems; consists of a VOA meter with built-in direct voltage adapter.

CDS System Kits and Components

Computer Diagnostic System (CDS)	Order through SPX
 <p>4520</p>	<p>Monitors all electrical systems for proper function, diagnostics, and calibration purposes. For additional information, pricing, or to order the Computer Diagnostic System contact:</p> <p>SPX Corporation 28635 Mound Rd. Warren, MI 48092</p> <p>or call: USA - 1-800-345-2233 Canada - 800-345-2233 Europe - 49 6182 959 149 Australia - (03) 9544-6222</p>

Breakout Box	SPX P/N MM-46225
 <p>5974</p>	<p>Connects to the Propulsion Control Module (PCM) to test engine circuits and components without probing wires. May be used with a Computer Diagnostic System (CDS).</p>
SmartComms Interface Box	SPX P/N MM-46944
 <p>25405</p>	<p>Interface between the computer and engine ECM or PCM. Can also be programmed to function as a stand-alone water test data recorder.</p>
Terminal Test Probe Kit	SPX P/N MM-46523
 <p>7915</p>	<p>Test probes adapt test meter leads to harness connections without damaging harness terminals. May be used with a Computer Diagnostic System (CDS).</p>
Water Test Trigger Cable	SPX P/N MM-46952
 <p>25459</p>	<p>Used for manually triggering a recording during a water test session when an engine problem occurs.</p>
AC/DC Adapter for SmartComms Interface Box	SPX P/N MM-46953
 <p>25458</p>	<p>Used to set up a SmartComms Interface Box for a water test session or to power up the box to download water test data when no 12 v DC source is available.</p>
PCMCIA Card and Cable Kit	SPX P/N MM-47095
 <p>25460</p>	<p>For serial connection to the DMT 2004 Digital Multi-meter or the Electronic Dual Input Pressure Gauge.</p>

Section 5 - Gasoline Engine

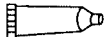
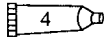
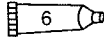
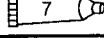
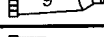
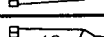
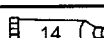
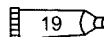
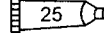
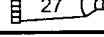
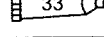
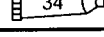
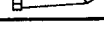
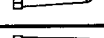
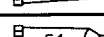
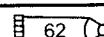
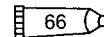
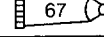
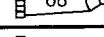
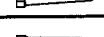
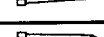
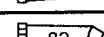
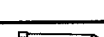
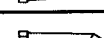
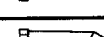
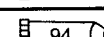



<p>Extension Cable</p>	<p>84-825003A1</p>
 <p>4012</p>	<p>Data link extension harness (3.05 m [10 ft.]) between the adapter harness and the Digital Diagnostic Terminal or Computer Diagnostic System (CDS).</p>
<p>DMT 2004 Digital Multimeter</p>	<p>91-892647A01</p>
 <p>4516</p>	<p>Measures RPM on spark ignition (SI) engines, ohms, amperes, AC and DC voltages; records maximums and minimums simultaneously, and accurately reads in high RFI environments.</p>
<p>Digital Pressure Meter</p>	<p>91-892651A01</p>
 <p>5786</p>	<p>Connects to the fuel system/manifold and can be used in conjunction with Computer Diagnostic System (CDS).</p>
<p>DTS Command Module Breakout Box</p>	<p>91-898254</p>
 <p>25457</p>	<p>Connects in-series with connectors at the command module.</p>

Section 6 - Lubricants/Sealants/Adhesives

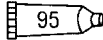
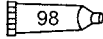
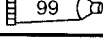
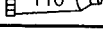
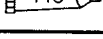
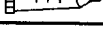
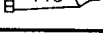
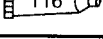
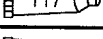
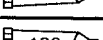
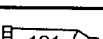
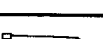
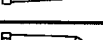
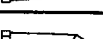
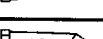
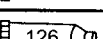
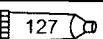
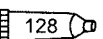
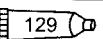
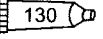
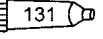
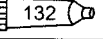
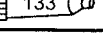
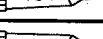
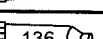
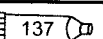
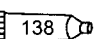


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LSA Table..... 70

LSA Table

Tube Ref No.	Description	Where Used	Part No.
		-	Obtain Locally
	Needle Bearing Assembly Lubricant	-	92-802868A1
	Dielectric Grease	-	92-823506-1
	Loctite 271 Threadlocker	-	92-809819
	Loctite 567 PST Pipe Sealant	-	92-809822
	Loctite 277	-	Obtain Locally
	Loctite Master Gasket Kit	-	92-12564-2
	2-cycle Premium Outboard Oil	-	92-802813A1
	Perfect Seal	-	92-34227-1
	Liquid Neoprene	-	92-25711-3
	Bellows Adhesive	-	92-86166Q1
	Loctite 680 Retaining Compound	-	92-809833
	Special Lubricant 101	-	92-802865Q02
	P80 Rubber Lubricant	-	Obtain Locally
	U-joint and Gimbal Bearing Grease	-	92-802870A1
	HI-Pressure Grease	-	Obtain Locally
	Loctite 222 Threadlocker	-	92-809818
	Cyanacrylate Adhesive	-	Obtain Locally
	Loctite 242 Threadlocker	-	92-809821
	Loctite 290	-	Obtain Locally
	Loctite 609	-	Obtain Locally
	Loctite 405	-	Obtain Locally
	MerCruiser 4-cycle 25W40 Engine Oil	-	92-802837A1
	SAE Engine Oil 30W	-	Obtain Locally
	Premium Gear Lubricant	-	92-802846A1
	Loctite 262	-	Obtain Locally
	High Performance Gear Lubricant	-	92-858064K01
	Engine Coupler Spline Grease	-	92-802869A1
	Anti-Corrosion Grease	-	92-802867Q 1

Section 6 - Lubricants/Sealants/Adhesives

Tube Ref No.	Description	Where Used	Part No.
 95	2-4-C Marine Lubricant with Teflon	-	92-802859A1
 98	Optimol White T Grease	-	92-847206
 99	Isopropyl Alcohol	-	Obtain Locally
 110	4 Stroke 10W30 Outboard Oil	-	92-802833A1
 113	Loctite Moly Paste (Molybdenum Disulfide Grease)	-	Obtain Locally
 114	Power Trim and Steering Fluid	-	92-858074K01
 115	Premium Plus 2-cycle TC-W3 Outboard Oil	-	92-802824A1
 116	RTV 587 Ultra Blue Silicone Sealer	-	92-809825
 117	Loctite 7649 Primer N	-	92-809824
 119	Storage Seal Rust Inhibitor	-	92-802878-56
 120	Corrosion Guard	-	92-802878-55
 121	15W40 4-cycle Diesel Engine Oil	-	92-858042K01
 122	Extended Life Antifreeze/Coolant	-	92-877770K1
 123	Marine Engine Coolant	-	92-813054A2
 124	Fuel System Treatment & Stabilizer	-	802875A1
 125	Heat Transfer Compound	-	92-805701
 126	Liquid Gasket	-	92-808137
 127	T442 Sealant	-	92-862258
 128	Loctite 5900 Ultra Black RTV Silicone Sealant	-	92-809826
 129	Loctite Gasket Remover	-	92-809828-1
 130	Sealer Kit, Two Part Epoxy	-	92-65150-1
 131	Loctite 5920 Ultra Copper Hi Temp RTV Silicone	-	Obtain Locally
 132	Alpha 2000 HD with Moly	-	Obtain Locally
 133	CT-C30A Lubricating Grease	-	Obtain Locally
 134	Loctite 380	-	Obtain Locally
 135	Three Bond 1217F	-	Obtain Locally
 136	Lubriplate SPO 255	-	Obtain Locally
 137	Three Bond Adhesive TB-1530	-	Obtain Locally
 138	Synthetic Power Steering Fluid SAE 0W-30	-	92-858076K01

Section 6 - Lubricants/Sealants/Adhesives

Tube Ref No.	Description	Where Used	Part No.
 139	Synthetic Blend 4-Stroke Outboard Oil 25W-40	-	92-883722K01

Section 7 - Tool Manufacturers

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Tool Manufacturers.....	74
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Tool Manufacturers

Cole-Palmer Instrument Company
800-323-4340
847-549-7600
847-247-2929 FAX
847-549-1700 International FAX

Fluke Corporation
P.O. Box 9090
Everett, WA 98206-9090
800-443-5853

Kent-More Tools/SPX Corporation
(J-Tools)
29784 Little Mack
Roseville, MI 48066
800-345-2233
Fax 810-578-7375

OTC Tools/SPX Corporation
655 Eisenhower Drive
Owatonna, MN 55060
800-533-0492
Fax 800-283-5665

Rinda Technologies
4563 N. Elston Avenue
Chicago, IL
773-736-6633
Fax 773-736-2950

SPX Service Repair
2800 Park Drive
Owatonna, MN 55060
800-344-4013

Stephens Instruments
111 Greenwood Avenue
Waukegan, IL 60079-9375
847-336-9375
Fax 847-662-6808